

# MANCHESTER IRON WORKS

ARCHITECTURAL, STRUCTURAL, ORNAMENTAL  
IRON AND STEEL

CATALOG "A"

SAINT LOUIS  
U. S. A.

# MANCHESTER IRON WORKS, ST. LOUIS

## TO OUR PATRONS

In preparing this catalogue it has been our aim to give an outline of the products we manufacture, or carry in stock, and can furnish promptly. However, we had to confine ourselves to a small number of designs and constructions, and we do not limit our production to the designs submitted, and will gladly work up any designs you may have, or prefer.

Send us your plans and specifications and we shall be pleased to quote you a very low price on all iron or steel required.

Our prices are at all times as low as is consistent with good workmanship and the market price of material.

All prices are subject to change without notice, and catalogue quotations are not an agreement to furnish material, unless the order is accepted by us.

St. Louis, being an important railroad center, freight rates to and from St. Louis are much lower than at many other places, resulting in considerable saving to our customers.

Our ambition shall always be to give entire satisfaction, both in quality and prompt service.

Thanking our many friends for past favors, we sincerely hope that these illustrations will result in mutual benefit.

Cordially yours,

St. Louis, March, 1916

MANCHESTER IRON WORKS.

# MANCHESTER IRON WORKS, ST. LOUIS

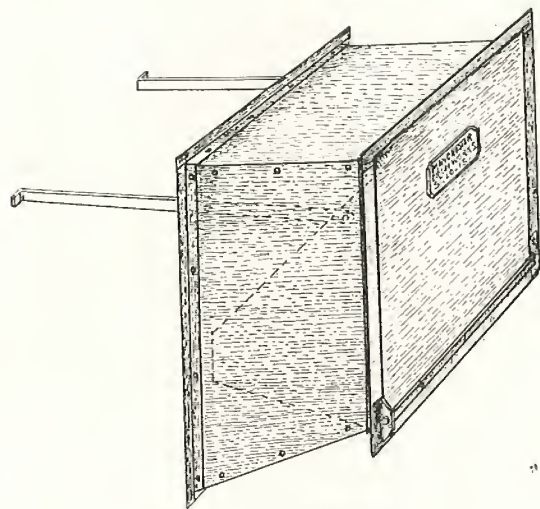
## GENERAL INSTRUCTIONS TO AVOID DELAYS

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1. When ordering, give full description of what you want, stating catalogue number and all sizes required; enclose sketch, if possible, but do not cut up the catalogue, as it is unnecessary.
2. When ordering structural material, state time when you must have same, and order as early as possible, as a little more time is always advantageous, and insures more care in executing your order.
3. Parties having no commercial rating, giving reference to banks or other responsible parties, should enclose letters from such persons, to avoid delay of investigating references.
4. When satisfactory rating is not obtainable, we send sight draft attached to bill of lading on bank at destination for collection.
5. It is our aim to treat all our customers with the utmost courtesy, but we must safeguard our accounts in order to secure low prices to all.
6. When quick shipment is desired, it is not necessary to write for prices, as regular current discounts will be allowed in all cases, whether specially quoted or not.

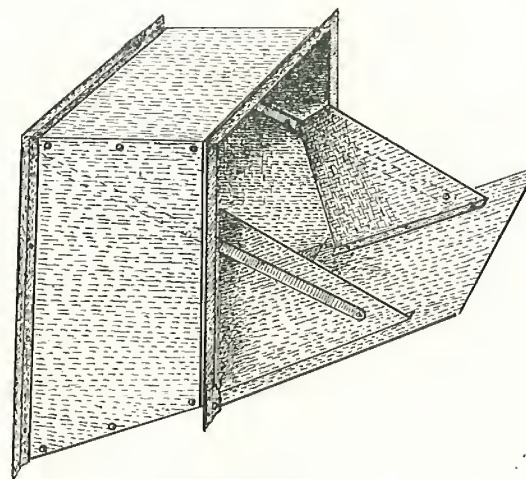


# MANCHESTER IRON WORKS, ST. LOUIS



No. 1 (Closed)

**No. 1—FULL BOX COAL CHUTE**



No. 1 (Open)

**DOOR OPENED, FORMING HOPPER**

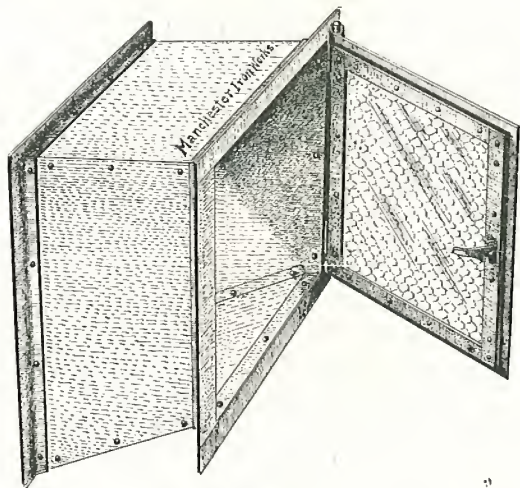
When coal chute is closed from outside, the arms will automatically lock it.

It is made from heavy steel, and has angle frame inside as well as outside of wall, holding it securely in the wall.

| Number      | Size of Door        | Price for 13 in. wall | 18-in. wall | 21 in. wall |
|-------------|---------------------|-----------------------|-------------|-------------|
| No. 1a..... | 20 in. x 20 in..... | \$ 7.80               | \$ 8.00     | \$ 8.60     |
| No. 1b..... | 24 in. x 24 in..... | 9.00                  | 9.20        | 9.80        |
| No. 1c..... | 30 in. x 24 in..... | 10.00                 | 10.40       | 11.20       |
| No. 1d..... | 30 in. x 30 in..... | 11.00                 | 11.60       | 12.60       |

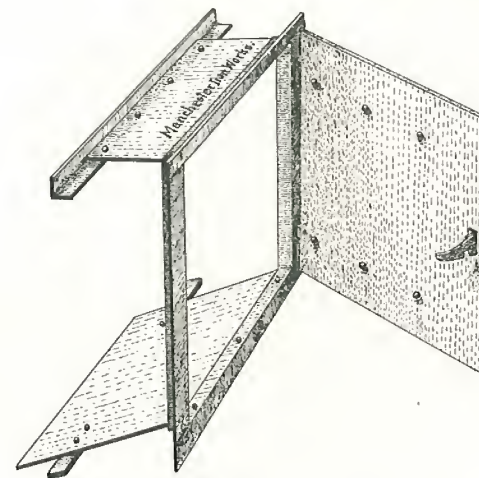
**Write for Discounts**

# MANCHESTER IRON WORKS, ST. LOUIS



No. 2

**No. 2—FULL BOX COAL CHUTE WITH SIDE-HINGED WIRED GLASS DOOR**



No. 3

**No. 3—COAL DOOR WITH SLANT STEEL BOTTOM AND SHEET STEEL AND ANGLE LINTEL**

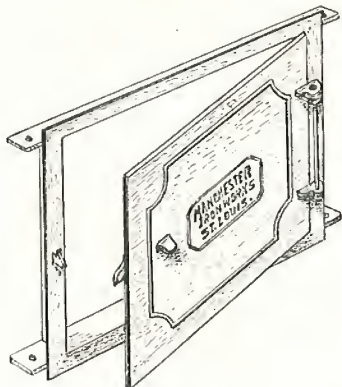
**No. 4—SIDE-HINGED STEEL DOOR BOX COAL CHUTE, SAME AS No. 2 WITH DOOR AS No. 3**

| Number      | Size of Door        | Price for 13 in. wall | For 18 in. wall | For 21 in. wall |
|-------------|---------------------|-----------------------|-----------------|-----------------|
| No. 2a..... | 20 in. x 20 in..... | \$11.60               | \$12.00         | \$12.60         |
| No. 2b..... | 24 in. x 24 in..... | 13.00                 | 13.40           | 14.00           |
| No. 3a..... | 20 in. x 20 in..... | 5.80                  | 6.00            | 6.30            |
| No. 3b..... | 24 in. x 24 in..... | 7.00                  | 7.30            | 7.70            |
| No. 4a..... | 20 in. x 20 in..... | 7.20                  | 7.50            | 8.00            |
| No. 4b..... | 24 in. x 24 in..... | 8.20                  | 8.60            | 9.20            |

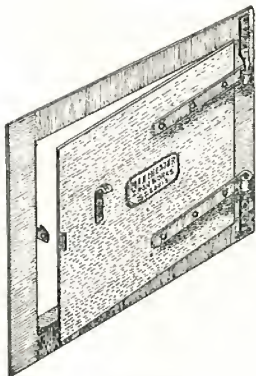
24 in. x 24 in. is the most convenient size of coal doors.

**Write for Discounts**

# MANCHESTER IRON WORKS, ST. LOUIS



No. 21



No. 25

## CLEANOUT DOORS FOR FLUES AND ASHPITS

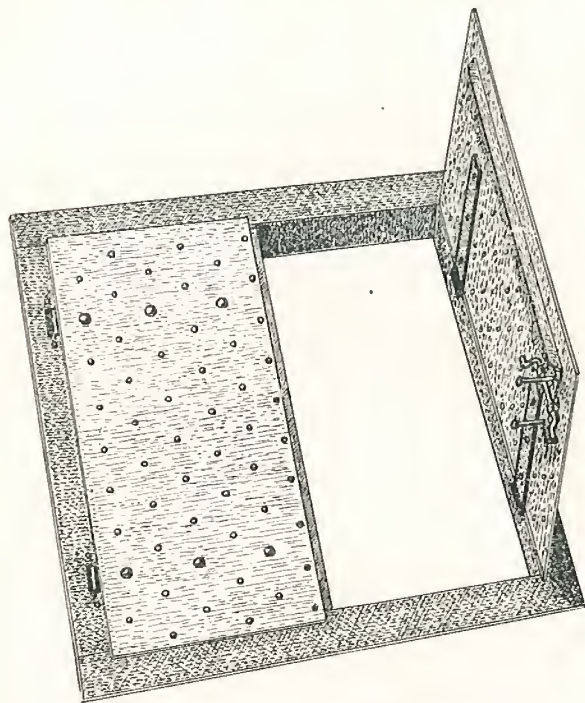
| Number         | Size of opening     | Price each |            | Size of door        | Price each |
|----------------|---------------------|------------|------------|---------------------|------------|
| No. 21         | 8 in. x 8 in.....   | \$1.00     | No. 25     | 10 in. x 10 in..... | \$1.40     |
| Cast Iron      | 10 in. x 12 in..... | 1.30       | Steel Door | 12 in. x 12 in..... | 1.75       |
| Door and Frame | 16 in. x 16 in..... | 2.50       | and Frame  | 16 in. x 16 in..... | 2.50       |
|                |                     |            |            | 18 in. x 18 in..... | 3.25       |
|                |                     |            |            | 20 in. x 20 in..... | 4.00       |

Price includes anchors for fastening frames to wall.

Write for Discounts



# MANCHESTER IRON WORKS, ST. LOUIS



No. 31

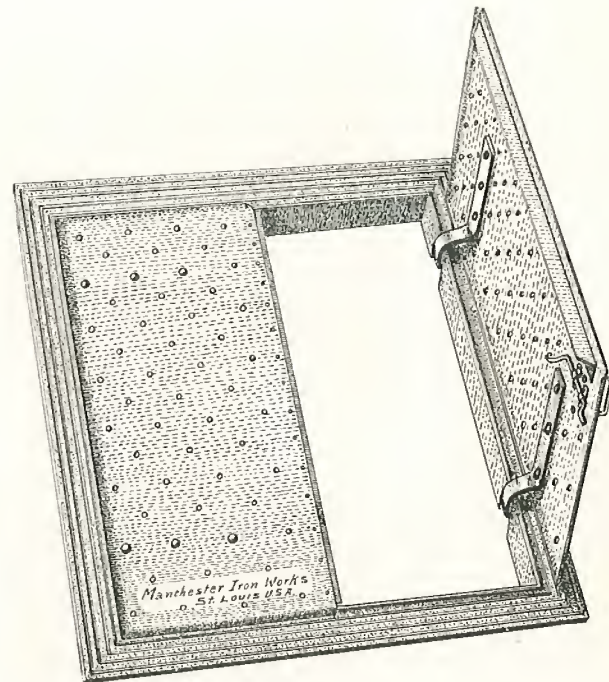
## CELLAR DOORS OR SIDEWALK DOORS

No. 31—Steel Doors with steel angle frame, concealed hinges, roughened top, well braced with angles and provided with strong hinges, and slide bolt for locking; a very practical and durable door.

No. 32—Steel Doors with cast iron frame; frame has raised edge around entire opening, and doors are curved over same, making these doors more water-proof.

In ordering, give width of opening first and then length.

We can furnish other sizes when desired.



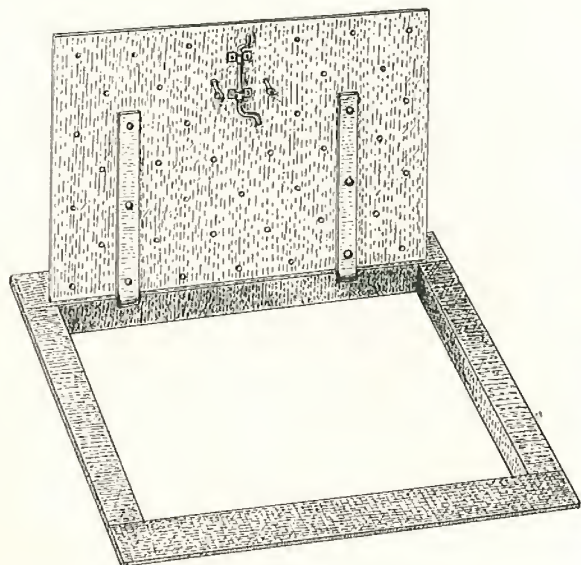
No. 32

Price f. o. b. cars St. Louis.

| Number      | 36 in. x 36 in. | 36 in. x 42 in. | 36 in. x 48 in. | 42 in. x 42 in. | 42 in. x 48 in. | 48 in. x 48 in. | 48 in. x 60 in. |
|-------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| No. 31..... | \$18.00         | \$19.00         | \$20.00         | \$20.50         | \$21.50         | \$23.00         | \$25.00         |
| No. 32..... | 20.00           | 21.00           | 22.00           | 23.00           | 24.50           | 26.00           | 30.00           |

Write for Discounts

# MANCHESTER IRON WORKS, ST. LOUIS



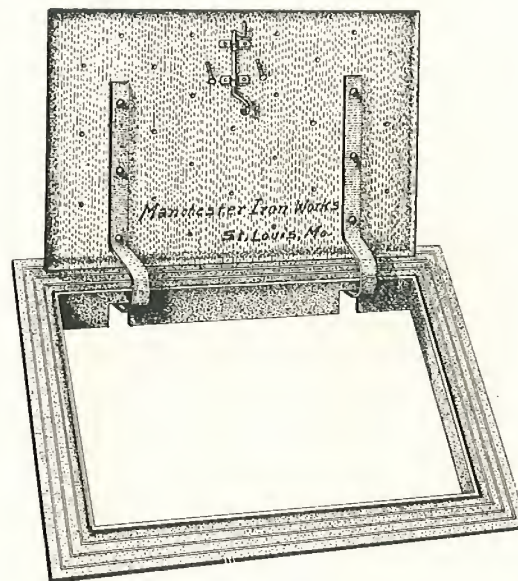
No. 33

## COAL DOORS FOR SIDEWALK OR YARD

No. 33—Steel Door with steel angle frame, strong hinges on under side of door, slide bolt for locking, and drop handle. Door is roughened to prevent slipping. A very strong, neat and durable door.

No. 34—Steel Door with cast iron frame, strong hinges, entirely concealed when closed; frame has raised edge at opening, and the door is curved over same, making door more waterproof.

We can furnish other sizes when desired.



No. 34

Prices f. o. b. cars St. Louis.

|                            |        |
|----------------------------|--------|
| No. 33—24 in. x 24 in..... | \$7.00 |
| 30 in. x 24 in.....        | 8.00   |
| 36 in. x 24 in.....        | 9.00   |

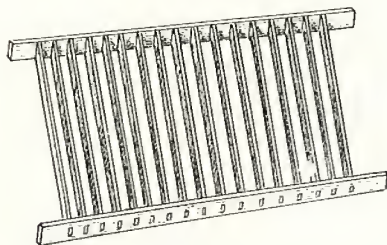
|                            |         |
|----------------------------|---------|
| No. 34—24 in. x 24 in..... | \$ 9.00 |
| 30 in. x 24 in.....        | 10.50   |
| 36 in. x 24 in.....        | 12.00   |

Write for Discounts

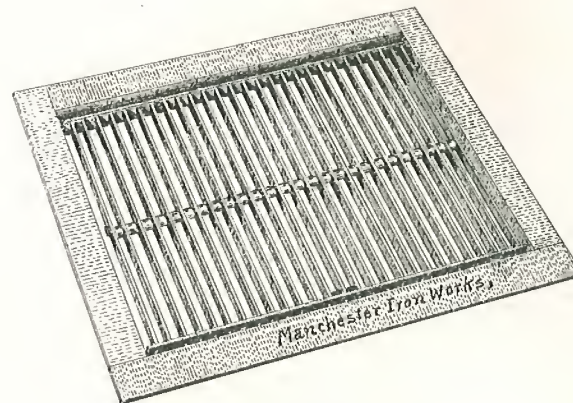


# MANCHESTER IRON WORKS, ST. LOUIS

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No. 35



No. 36

## GRATINGS FOR AREAS IN SIDEWALK OR YARD

No. 35—Plain grating without frame, ends of bars project so that same may be secured in concrete or other material.

No. 36—Hinged grating in steel angle frame, with lug for locking from inside. We can furnish any size.

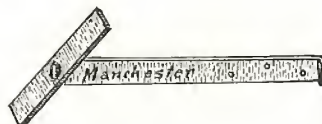
Prices range from 60 cents to \$1.20 per square foot, according to material used, size and number of gratings.

State size and number of gratings wanted, when writing for prices. See paragraph 6, page 2.

# MANCHESTER IRON WORKS, ST. LOUIS



No. 41



No. 42



No. 46



No. 44



No. 47



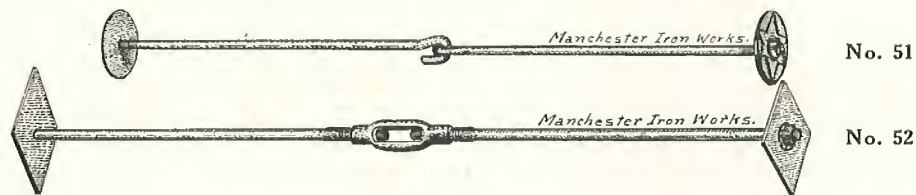
No. 48

## ANCHORS

|   |                 |        |
|---|-----------------|--------|
| No. 41—Star Joist Anchor, Cast Iron Star, 18 in. steel shank with thread and nut.                 | Price each..... | \$ .20 |
| No. 42—Tee Joist Anchor, steel head and 18 in. shank riveted.....                                 |                 | .12    |
| No. 44—Partition Anchor, 7 in. steel head, $\frac{1}{2}$ in. diameter bolt, 12 in. long .....     |                 | .10    |
| No. 46—Strap Anchor, $1\frac{1}{4}$ in. x $\frac{3}{16}$ in. strap, 20 in. long, hooked ends..... |                 | .09    |
| No. 47—Strap Anchor, $1\frac{1}{4}$ in. x $\frac{3}{16}$ in. strap, 24 in. long, hooked ends..... |                 | .12    |
| No. 48—Wall Plate Anchor a, $\frac{1}{2}$ in. bolt, 18 in. long, 3 in. x 3 in. head.....          |                 | .15    |
| b, $\frac{1}{2}$ in. bolt, 24 in. long, 3 in. x 4 in. head.....                                   |                 | .20    |
| c, $\frac{5}{8}$ in. bolt, 24 in. long, 4 in. x 4 in. head.....                                   |                 | .25    |
| d, $\frac{5}{8}$ in. bolt, 30 in. long, 4 in. x 4 in. head.....                                   |                 | .30    |

When writing for Discounts, state quantity and size wanted.

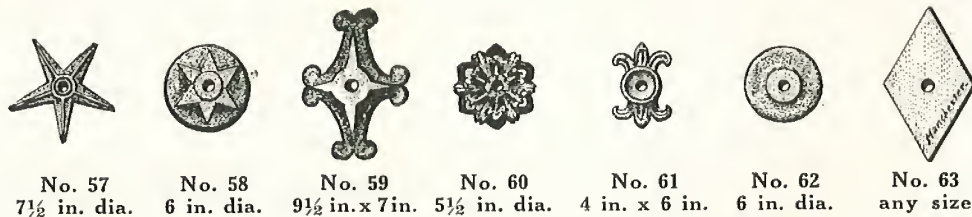
# MANCHESTER IRON WORKS, ST. LOUIS



## TIE RODS

No. 51—Plain Tie Rods, 12 ft. long in one length; longer rods hooked in about 12 ft. sections.

No. 52—Tie Rods with turnbuckle in center. All our turnbuckle rods are made with upset bolt ends, so that the diameter of the thread is larger than the diameter of the rod, getting equal strength at all parts of the rod.



No. 57  
7½ in. dia.

No. 58  
6 in. dia.

No. 59  
9½ in. x 7 in.

No. 60  
5½ in. dia.

No. 61  
4 in. x 6 in.

No. 62  
6 in. dia.

No. 63  
any size

## END PLATES FOR TIE RODS OR ANCHORS

We can furnish end plates for any size rod. The following sizes carried in stock:

Nos. 57, 60, 61—for ½ in. and ⅝ in. diameter rod.

Nos. 58, 62—for ⅝ in. and ¾ in. diameter rod.

No. 59—for ¾ in. and 7⁄8 in. diameter rod.

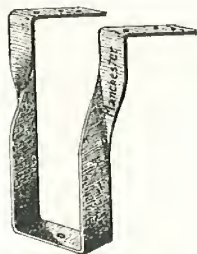
No. 63—for ½ in. to 1 in. diameter rod.

When ordering tie rods, state length between plates, diameter of rod, and style of end plate desired. When end plates are not specified, we send suitable plates.

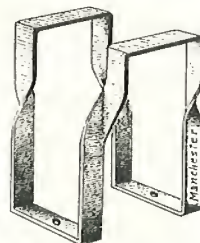
Prices on application. See paragraph 6, page 2.



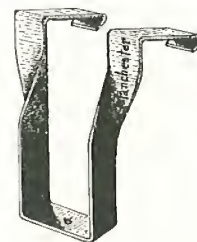
# MANCHESTER IRON WORKS, ST. LOUIS



No. 71



No. 72



No. 73

## STIRRUPS OR JOIST HANGERS

We furnish hangers for all classes of buildings, residences, stores, warehouses, factories, etc. Stirrups for larger girders are made similar, of heavier material.

| Number  | Material                   | Size of joists | Actual size                              | Price each |
|---------|----------------------------|----------------|--|------------|
| No. 71— | 2 in. x $\frac{1}{8}$ in.  | 2 in. x 8 in.  | $1\frac{3}{4}$ in. x $7\frac{5}{8}$ in.  | \$.18      |
|         | 2 in. x $\frac{1}{8}$ in.  | 2 in. x 10 in. | $1\frac{3}{4}$ in. x $9\frac{5}{8}$ in.  | .19        |
|         | 2 in. x $\frac{1}{8}$ in.  | 2 in. x 12 in. | $1\frac{3}{4}$ in. x $11\frac{5}{8}$ in. | .20        |
|         | 2 in. x $\frac{3}{16}$ in. | 2 in. x 10 in. | $1\frac{3}{4}$ in. x $9\frac{5}{8}$ in.  | .25        |
|         | 2 in. x $\frac{3}{16}$ in. | 2 in. x 12 in. | $1\frac{3}{4}$ in. x $11\frac{5}{8}$ in. | .27        |
|         | 2 in. x $\frac{1}{4}$ in.  | 2 in. x 10 in. | $1\frac{3}{4}$ in. x $9\frac{5}{8}$ in.  | .30        |
|         | 2 in. x $\frac{1}{4}$ in.  | 2 in. x 12 in. | $1\frac{3}{4}$ in. x $11\frac{5}{8}$ in. | .33        |

Heavier stirrups  
prices on application.

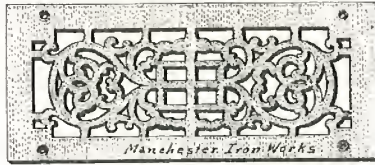
**Write for Discounts.**

For hangers for double joists, add two cents to list.

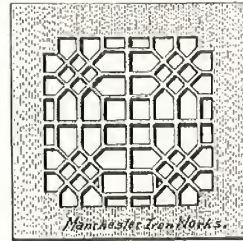
No. 72—Double hanger, twice list of No. 71, plus five cents.

No. 73—for hanging joists to steel beams; add four cents to list of No. 71.

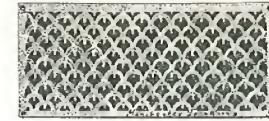
# MANCHESTER IRON WORKS, ST. LOUIS



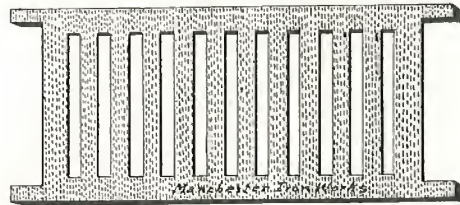
No. 75



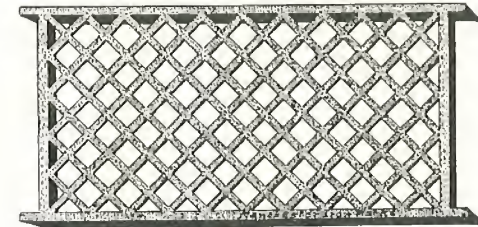
No. 77



No. 76



No. 78



No. 79

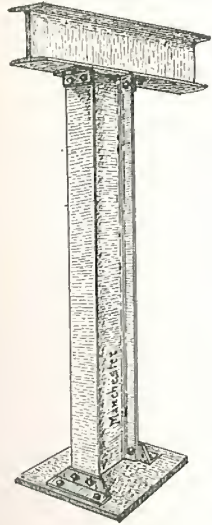
## CAST IRON VENT GRATES

For ventilating foundations, space between roof and ceiling joists, space under porches, veranda, etc.

| Number      | Size               | Price  |
|-------------|--------------------|--------|
| No. 75..... | 5 in. x 12 in..... | \$ .20 |
| No. 76..... | 5 in. x 12 in..... | .20    |
| No. 77..... | 8 in. x 8 in.....  | .15    |
| No. 78..... | 6 in. x 12 in..... | .18    |
| No. 79..... | 7 in. x 13 in..... | .24    |

We can furnish other sizes and other designs within a few days after receiving order. If discounts are not asked for, they will be allowed on invoice, same as if quoted.

# MANCHESTER IRON WORKS, ST. LOUIS



**No. 100 STEEL I  
BEAM COLUMN**

showing connection  
to foot plate and  
girder above.

Girders are punched  
to fit column, and  
can easily be bolted  
in place.

**No. 100**



**No. 101 PIPE  
COLUMN**

The shaft is stand-  
ard pipe, with cast  
iron cap and foot  
plate shrunk on.

For Price List, see  
page 14.

**No. 101**



**No. 105 CAST IRON  
COLUMN**

with bracketed cap  
and ribbed foot  
plate.

For Price List, see  
page 14.

**No. 105**

## PLAIN COLUMNS

When ordering columns, state kind, size, and width of girder above.

These columns show the three principal means of supporting floor girders, disposing of the old-fashioned timber and costly and clumsy brick pier.

It is advisable to keep foot plates of I beam columns and pipe columns one or two inches above the floor, to prevent any possible corrosion of the shaft. Cast iron columns may be set so that ribbed foot plate is below floor line.

All these columns are used extensively, and have proved far superior to brick or wood in strength, convenience and durability. See comparison of breaking loads, page 63.

The perspective view has been exaggerated, to show detail of cap and foot plate more clearly.

Send us your list or plans and we shall be pleased to quote you interesting prices.



# MANCHESTER IRON WORKS, ST. LOUIS

## PRICE LIST OF PLAIN COLUMNS

|  |   | Price            |                  |                  |                  |
|--|---|------------------|------------------|------------------|------------------|
| Size of shaft                                | Size of footplate   | 6 ft. 0 in. long | 6 ft. 6 in. long | 7 ft. 0 in. long | 7 ft. 6 in. long |
| No. 100—3 in. I Beam Column.....             | 10 in. x 10 in. x $\frac{1}{2}$ in.....                           | \$3.10           | \$3.25           | \$3.40           | \$3.55           |
| 4 in. I Beam Column.....                     | 10 in. x 10 in. x $\frac{1}{2}$ in.....                           | 3.50             | 3.70             | 3.90             | 4.10             |
| 5 in. I Beam Column.....                     | 10 in. x 10 in. x $\frac{1}{2}$ in.....                           | 4.00             | 4.25             | 4.50             | 4.75             |
| 6 in. I Beam Column.....                     | 12 in. x 12 in. x $\frac{1}{2}$ in.....                           | 5.20             | 5.50             | 5.80             | 6.10             |
| 7 in. I Beam Column.....                     | 12 in. x 12 in. x $\frac{5}{8}$ in.....                           | 6.25             | 6.60             | 6.95             | 7.30             |
| 8 in. I Beam Column.....                     | 14 in. x 14 in. x $\frac{3}{4}$ in.....                           | 7.50             | 7.95             | 8.40             | 8.85             |
| No. 101—Pipe Column.                         |   |                  |                  |                  |                  |
| 3 $\frac{1}{2}$ in. diameter.....            | 7 $\frac{1}{2}$ in. x 7 $\frac{1}{2}$ in. x $\frac{1}{2}$ in..... | \$3.50           | \$3.70           | \$3.90           | \$4.05           |
| 4 in. diameter.....                          | 8 in. x 8 in. x $\frac{1}{2}$ in.....                             | 4.25             | 4.50             | 4.75             | 5.00             |
| 4 $\frac{1}{2}$ in. diameter.....            | 8 in. x 8 in. x $\frac{1}{2}$ in.....                             | 4.70             | 5.00             | 5.30             | 5.60             |
| 5 in. diameter.....                          | 9 in. x 9 in. x $\frac{1}{2}$ in.....                             | 5.30             | 5.65             | 6.00             | 6.35             |
| 5 $\frac{1}{2}$ in. diameter.....            | 9 in. x 9 in. x $\frac{1}{2}$ in.....                             | 6.00             | 6.40             | 6.80             | 7.20             |
| No. 105—Cast Iron Column.                    |   |                  |                  |                  |                  |
| 4 in. diameter, $\frac{1}{2}$ in. metal..... | 12 in. x 12 in. x $\frac{3}{4}$ in.....                           | \$ 7.00          | \$ 7.45          | \$ 7.90          | \$ 8.35          |
| 5 in. diameter, $\frac{1}{2}$ in. metal..... | 12 in. x 12 in. x $\frac{3}{4}$ in.....                           | 7.75             | 8.30             | 8.85             | 9.40             |
| 6 in. diameter, $\frac{5}{8}$ in. metal..... | 12 in. x 12 in. x 1 in.....                                       | 11.40            | 12.10            | 12.80            | 13.50            |
| 7 in. diameter, $\frac{3}{4}$ in. metal..... | 12 in. x 12 in. x 1 in.....                                       | 14.20            | 15.20            | 16.20            | 17.20            |

For longer columns, continue list in same proportion.

All prices are f. o. b. cars St. Louis. We do not charge drayage; freight only.

Write for Discounts

# MANCHESTER IRON WORKS, ST. LOUIS

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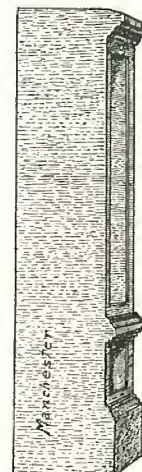
No. 111

No. 111—Cast Iron  
Plain Paneled Store  
Front Column.



No. 114

No. 114—Cast Iron  
Round Column for  
Corner Entrance to  
Stores.



No. 116

No. 116—Cast Iron  
Open Back Box Col-  
umn with Moulded  
and Paneled Front.

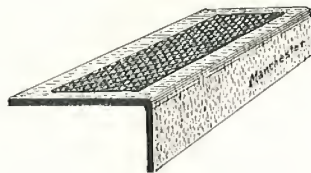
## CAST IRON STORE FRONT COLUMNS

Above columns show only the principal difference in shape. We can furnish columns of any other design. We shall be pleased to quote you according to plans and specifications.

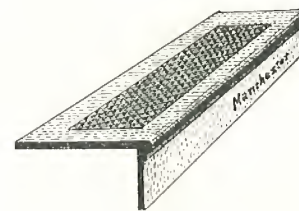
Send us your blue prints for estimate.

**Prices of columns on application.**

# MANCHESTER IRON WORKS, ST. LOUIS



No. 131



No. 132

## SILLS

No. 131—Cast Iron Sill with rounded nose.

No. 132—Cast Iron Sill with moulded nosing and scotia.

Cast Iron Sills are scoriated at entrances and plain under show windows, with lug at back for store front.

Where small sill is desired, steel angle is often used in place of cast iron sills.

Cast Iron Sill 12 in. wide, of  $\frac{5}{8}$  in. metal with 7 in. riser of  $\frac{1}{2}$  in. metal. Price per ft.....\$1.40

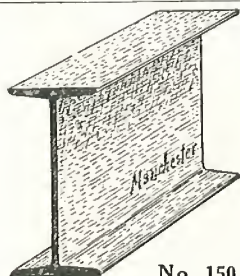
Steel Angle Sill, 6 in. wide with 6 in. riser of  $\frac{3}{8}$  in. metal. Price per ft..... .80

When ordering sills, send sketch of exact location of entrances, show windows, and columns, so that we can properly do all necessary fitting.

**Prices quoted are subject to discount.**



# MANCHESTER IRON WORKS, ST. LOUIS

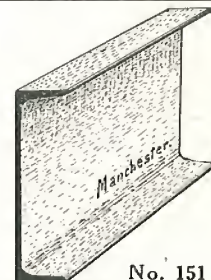


No. 150

## STEEL I BEAMS, No. 150, AND CHANNELS, No. 151

carried in stock and cut to any length

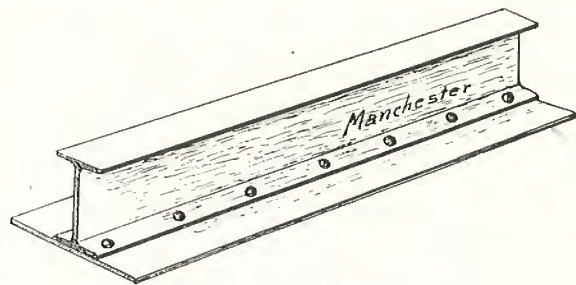
Safe Load of Standard Steel I Beams in pounds, and includes weight of beam when supported at both ends, and load evenly distributed; if load is concentrated at center, allow one-half the table.



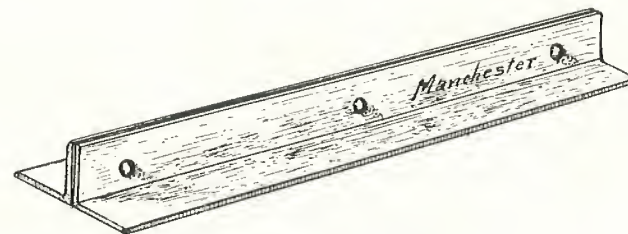
No. 151

| Size<br>Weight | Span<br>in ft. | 3 in.<br>5.5 | 4 in.<br>7.5 | 5 in.<br>9.75 | 6 in.<br>12.25 | 7 in.<br>15 | 8 in.<br>18 | 9 in.<br>21 | 10 in.<br>25 | 12 in.<br>31.5 | 15 in.<br>42 | 18 in.<br>55 | 20 in.<br>65 | 24 in.<br>80 |
|----------------|----------------|--------------|--------------|---------------|----------------|-------------|-------------|-------------|--------------|----------------|--------------|--------------|--------------|--------------|
|                | 4 ft.          | 4410         | 7950         | 12900         | 19370          | 27600       | 37920       |             |              |                |              |              |              |              |
|                | 5 ft.          | 3530         | 6360         | 10320         | 15490          | 22080       | 30330       |             |              |                |              |              |              |              |
|                | 6 ft.          | 2940         | 5300         | 8600          | 12910          | 18400       | 25280       |             |              |                |              |              |              |              |
|                | 7 ft.          | 2520         | 4540         | 7370          | 11070          | 15770       | 21670       |             |              |                |              |              |              |              |
|                | 8 ft.          | 2210         | 3980         | 6450          | 9680           | 13800       | 18950       | 25160       |              |                |              |              |              |              |
|                | 9 ft.          | 1960         | 3530         | 5730          | 8610           | 12270       | 16850       | 22370       |              |                |              |              |              |              |
|                | 10 ft.         | 1770         | 3180         | 5160          | 7750           | 11040       | 15170       | 20130       | 26050        | 38370          | 62830        | 94290        | 124750       | 185530       |
|                | 11 ft.         | 1600         | 2890         | 4690          | 7040           | 10040       | 13790       | 18300       | 23680        | 34880          | 57120        | 85720        | 113410       | 168660       |
|                | 12 ft.         | 1470         | 2650         | 4300          | 6460           | 9200        | 12640       | 16770       | 21710        | 31970          | 52360        | 78570        | 103960       | 154610       |
|                | 13 ft.         | 1360         | 2450         | 3970          | 5960           | 8490        | 11670       | 15480       | 20040        | 29510          | 48330        | 72530        | 95960        | 142720       |
|                | 14 ft.         | 1260         | 2270         | 3680          | 5530           | 7890        | 10830       | 14380       | 18610        | 27400          | 44880        | 67350        | 89110        | 132520       |
|                | 15 ft.         | 1180         | 2120         | 3440          | 5160           | 7360        | 10110       | 13420       | 17360        | 25580          | 41880        | 62860        | 83170        | 123690       |
|                | 16 ft.         | 1100         | 1990         | 3220          | 4840           | 6900        | 9480        | 12580       | 16280        | 23980          | 39270        | 58930        | 77970        | 115960       |
|                | 17 ft.         | 1040         | 1870         | 3030          | 4560           | 6490        | 8920        | 11840       | 15320        | 22570          | 36960        | 55460        | 73380        | 109140       |
|                | 18 ft.         | 980          | 1770         | 2870          | 4300           | 6130        | 8430        | 11180       | 14470        | 21310          | 34900        | 52380        | 69310        | 103070       |
|                | 19 ft.         | 930          | 1670         | 2720          | 4080           | 5810        | 7980        | 10590       | 13710        | 20190          | 33070        | 49630        | 65660        | 97650        |
|                | 20 ft.         | 880          | 1590         | 2580          | 3870           | 5520        | 7580        | 10064       | 13020        | 19180          | 31410        | 47140        | 62370        | 92770        |
|                | 21 ft.         | 840          | 1510         | 2460          | 3690           | 5260        | 7220        | 9590        | 12400        | 18270          | 29920        | 44900        | 59400        | 88350        |
|                | 22 ft.         |              |              | 2340          | 3520           | 5020        | 6890        | 9150        | 11840        | 17440          | 28560        | 42860        | 56700        | 84330        |
|                | 23 ft.         |              |              | 2240          | 3370           | 4800        | 6590        | 8750        | 11320        | 16680          | 27320        | 40990        | 54240        | 80670        |
|                | 24 ft.         |              |              | 2150          | 3230           | 4600        | 6320        | 8390        | 10850        | 15990          | 26180        | 39290        | 51980        | 77330        |
|                | 25 ft.         |              |              | 2060          | 3100           | 4420        | 6070        | 8050        | 10420        | 15350          | 25130        | 37720        | 49900        | 74210        |

# MANCHESTER IRON WORKS, ST. LOUIS



No. 152



No. 153

## STEEL LINTELS

No. 152—Steel I Beam with plate riveted to flange. Usual thickness of plates is  $\frac{1}{4}$  in., but we can furnish heavier plates.

Single steel I beam lintels may safely be used to carry 13 in. wall over openings two feet wider than one foot to each inch in height of beam.

For example, use 7 in. I beam for 9 ft. opening.

When floor girders, chimney breasts or other concentrated loads rest on lintel, the beam must be larger.

See table of safe loads on page 17.

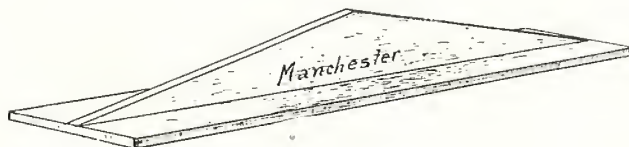
No. 153—Two Steel Angles riveted or bolted.

Double angles are frequently used in place of cast lintels, as they are lighter, more easily set, and can be depended on to carry their full load.

See table of safe loads, page 62.

See weights of material, page 63.

# MANCHESTER IRON WORKS, ST. LOUIS



No. 155

## CAST IRON LINTELS

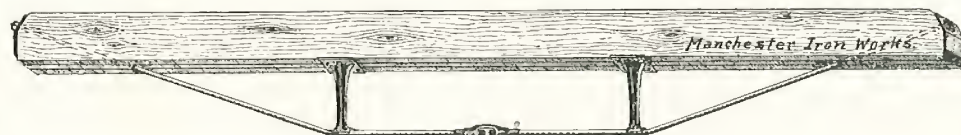
| Width  | Height of rib | Thickness of metal | Weight per ft. | Price per 100 lbs. |
|--------|---------------|--------------------|----------------|--------------------|
| 8 in.  | 6 in.         | $\frac{1}{2}$ in.  | 18 lbs.        | \$3.15             |
| 8 in.  | 8 in.         | $\frac{5}{8}$ in.  | 24 lbs.        | 3.00               |
| 8 in.  | 10 in.        | $\frac{3}{4}$ in.  | 30 lbs.        | 2.95               |
| 9 in.  | 6 in.         | $\frac{1}{2}$ in.  | 20 lbs.        | 3.15               |
| 9 in.  | 8 in.         | $\frac{5}{8}$ in.  | 26 lbs.        | 3.00               |
| 9 in.  | 10 in.        | $\frac{3}{4}$ in.  | 32 lbs.        | 2.90               |
| 11 in. | 6 in.         | $\frac{1}{2}$ in.  | 22 lbs.        | 3.10               |
| 11 in. | 8 in.         | $\frac{5}{8}$ in.  | 32 lbs.        | 2.95               |
| 11 in. | 8 in.         | $\frac{3}{4}$ in.  | 36 lbs.        | 2.90               |
| 11 in. | 10 in.        | $\frac{3}{4}$ in.  | 38 lbs.        | 2.90               |
| 12 in. | 6 in.         | $\frac{1}{2}$ in.  | 23 lbs.        | 3.10               |
| 12 in. | 6 in.         | $\frac{5}{8}$ in.  | 30 lbs.        | 2.95               |
| 12 in. | 8 in.         | $\frac{5}{8}$ in.  | 32 lbs.        | 2.95               |
| 12 in. | 8 in.         | $\frac{3}{4}$ in.  | 37 lbs.        | 2.90               |
| 12 in. | 10 in.        | $\frac{3}{4}$ in.  | 40 lbs.        | 2.90               |
| 12 in. | 10 in.        | $\frac{7}{8}$ in.  | 48 lbs.        | 2.85               |

Prices f. o. b. cars  
St. Louis.

Write for Discounts.



# MANCHESTER IRON WORKS, ST. LOUIS



No. 157

## HOG CHAINS OR TRUSS RODS

A very economical method of reinforcing girders.

We furnish these rods with upset bolt ends, so as to get the full strength of the rod; cast iron struts and bent steel end plates. The struts are made for one, two or three rods and end plates to match. Usual depth of struts is 24 in., but we can furnish other sizes.

| Diameter of rod | Number of rods | Price for Span of 30 ft. or less | Each additional ft. |
|-----------------|----------------|----------------------------------|---------------------|
| 1 in.           | Single         | \$11.50                          | \$ .15              |
| 1 in.           | Double         | 17.50                            | .25                 |
| 1 in.           | Triple         | 25.00                            | .40                 |
| 1¼ in.          | Single         | 14.00                            | .25                 |
| 1¼ in.          | Double         | 22.50                            | .40                 |
| 1¼ in.          | Triple         | 33.00                            | .65                 |
| 1½ in.          | Single         | 20.50                            | .40                 |
| 1½ in.          | Double         | 34.00                            | .70                 |
| 1½ in.          | Triple         | 49.00                            | 1.05                |

Write for Discounts

# MANCHESTER IRON WORKS, ST. LOUIS



No. 160



No. 165



No. 166

## CAST IRON BEARING PLATES AND FOOTPLATES

No. 160—Plain Cast Iron Plate for wall end of I beam or wood girder.

No. 165—Plain Cast Iron Dowel Plate for wood post or girder.

No. 166—Beveled Cast Iron Doweled Footplate for wood post.

For iron columns we furnish cross lugs on top of plate, instead of pin.

### Weights for Nos. 160 and 165

|                            |         |
|----------------------------|---------|
| 8x 8x $\frac{1}{2}$ .....  | 8 lbs.  |
| 8x12x $\frac{1}{2}$ .....  | 12 lbs. |
| 10x10x $\frac{1}{2}$ ..... | 13 lbs. |
| 12x12x $\frac{1}{2}$ ..... | 18 lbs. |
| 8x12x $\frac{5}{8}$ .....  | 15 lbs. |
| 12x12x $\frac{5}{8}$ ..... | 23 lbs. |
| 12x12x $\frac{3}{4}$ ..... | 27 lbs. |
| 12x16x $\frac{3}{4}$ ..... | 36 lbs. |
| 14x14x $\frac{3}{4}$ ..... | 37 lbs. |
| 16x16x $\frac{3}{4}$ ..... | 48 lbs. |
| 16x16x1.....               | 64 lbs. |

### Weights for No. 166

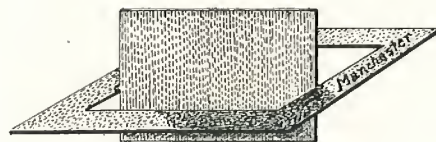
|  |          |
|--|----------|
| 12x12x1 in. to $\frac{1}{2}$ in.....               | 28 lbs.  |
| 14x14x1 $\frac{1}{4}$ in. to $\frac{3}{4}$ in..... | 50 lbs.  |
| 16x16x1 $\frac{1}{2}$ in. to 1 in.....             | 83 lbs.  |
| 18x18x1 $\frac{1}{2}$ in. to 1 in.....             | 110 lbs. |

### Price f. o. b. cars St. Louis

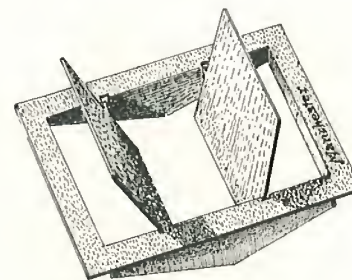
|                               |                     |
|-------------------------------|---------------------|
| $\frac{1}{2}$ in. plates..... | \$3.00 per 100 lbs. |
| $\frac{5}{8}$ in. plates..... | 2.95 per 100 lbs.   |
| $\frac{3}{4}$ in. plates..... | 2.85 per 100 lbs.   |
| 1 in. and heavier.....        | 2.80 per 100 lbs.   |

Write for Discounts

# MANCHESTER IRON WORKS, ST. LOUIS



No. 172

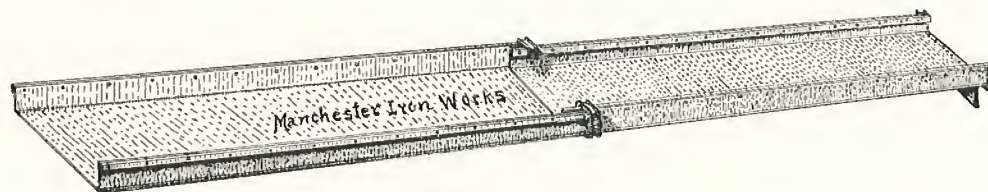


No. 173

## ASH DUMPS FOR HEARTHES

No. 172—Single Ash Dump, opening  $6\frac{1}{2}$  in. x  $4\frac{1}{2}$  in. Price each.....\$ .70

No. 173—Double Ash Dump, opening  $7\frac{1}{2}$  in. x  $5\frac{1}{2}$  in. Price each..... 1.00



No. 174

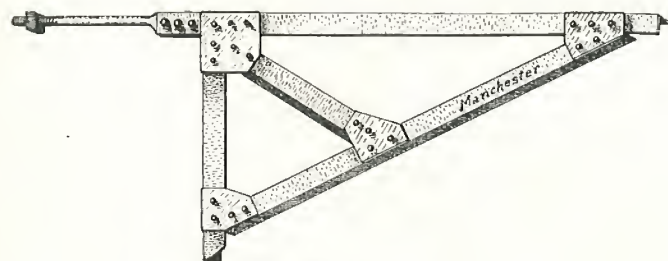
## COAL SLIDES OR UNLOADING CHUTES

No. 174 shows slide reinforced with steel bars and channel guides. Slides are usually made in 8 ft. or 10 ft. sections, 18 in. wide with 4 in. sides. We can furnish same with plain edge, rolled edge, or angle edge, any size desired.

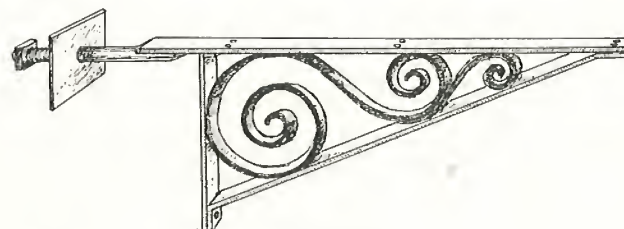
**Prices on Application**



# MANCHESTER IRON WORKS, ST. LOUIS



No. 181



No. 182

## BALCONY SUPPORTING BRACKETS

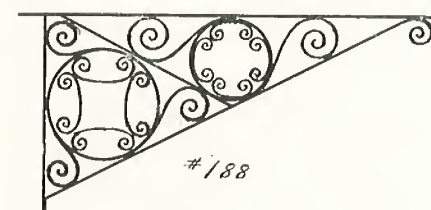
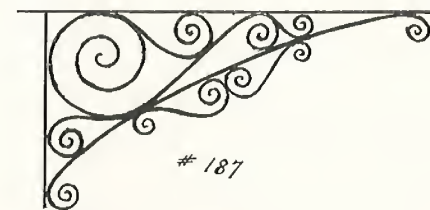
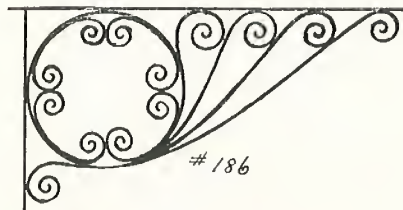
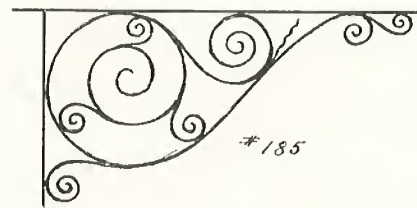
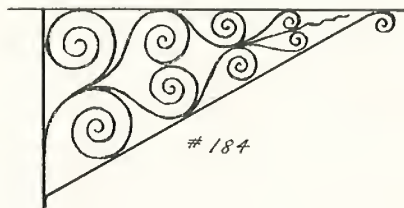
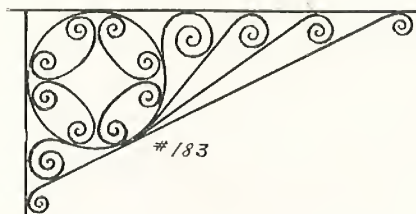
| Number   | Description                           | Projection from wall, | 3 ft.  | 3½ ft. | 4 ft.  | 4½ ft. |
|----------|---------------------------------------|-----------------------|--------|--------|--------|--------|
| No. 181— | Steel Angle Bracket. Price each.....  |                       | \$2.50 | \$2.75 | \$3.00 | \$3.25 |
| No. 182— | Stock Scroll Bracket. Price each..... |                       | 3.50   | 4.00   | 4.50   | 5.00   |

When ordering brackets, state thickness of wall, or length of bolt from outside of wall to end of bolt. When no length is given we furnish 17 in. bolt to extend through 13 in. wall and first joist. Steel plate washer always included.

Write for Discounts

# MANCHESTER IRON WORKS, ST. LOUIS

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## BALCONY SUPPORTING BRACKETS

Nos. 183-188—Designs for Balcony Brackets, which may be used where more ornamentation is desired. When asking for prices, state projection from wall, and number of brackets required. Thickness of material is varied, according to size of bracket.

Prices on Application

# MANCHESTER IRON WORKS, ST. LOUIS



No. 194



No. 195

## CHIMNEY BRACES

No. 194— $\frac{3}{4}$  in. diameter rod, total length 7 ft. or less, Price each.....\$1.25      Each additional ft., \$ .08  
 No. 195— $\frac{3}{4}$  in. square rod, total length 7 ft. or less, Price each..... 1.50      Each additional ft., .10

We can furnish other sizes and designs, also with separate eye bolt through chimney.



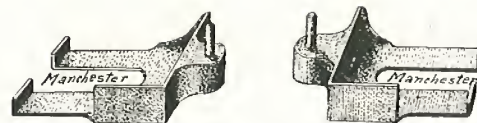
No. 196

FLUE THIMBLES

## No. 196 CAST IRON FLUE RINGS OR THIMBLES

We carry in stock rings to fit 6 in.,  
7 in., 8 in., 10 in., and 12 in. Pipe.

|             |                 |        |
|-------------|-----------------|--------|
| Price each, | 6 in. dia.....  | \$ .25 |
|             | 7 in. dia.....  | .30    |
|             | 8 in. dia.....  | .40    |
|             | 10 in. dia..... | .60    |
|             | 12 in. dia..... | .90    |



No. 197

## HINGE BLOCKS

No. 197—Cast Iron Hinge Blocks are furnished in pairs.  
They are to be built into brick jambs for hanging garage or  
stable doors directly to brick wall.

Price per pair, \$.90



# MANCHESTER IRON WORKS, ST. LOUIS

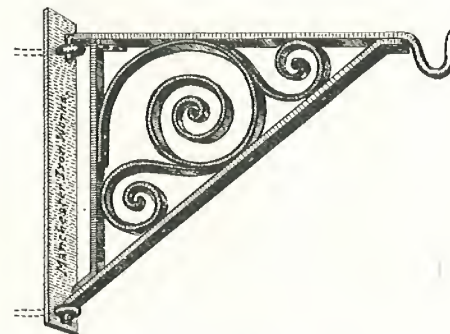


No. 198

## COAL HOLE RINGS

- No. 198 18 in. dia. cover, 6 in. deep, 4 in. flange, Price each. \$5.00  
 21 in. dia. cover, 6 in. deep, 4 in. flange, Price each. 6.00  
 24 in. dia. cover, 6 in. deep, 4 in. flange, Price each. 7.00

We can furnish other sizes if desired. If rings are to be used for cistern tops, we furnish same with lugs on ring and cover locking lid by slight turn, in place of bolt and locking bar.



No. 200

## SWINGING ASH HOIST

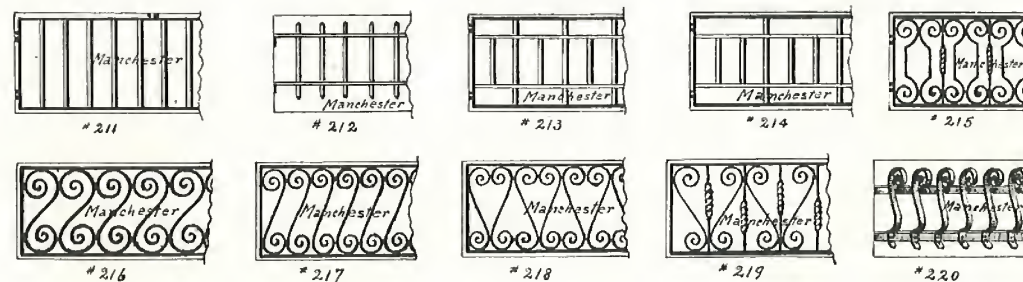
- No. 200 18 in. projection from wall, Price each. . . . . \$3.50  
 24 in. projection from wall, Price each. . . . . 4.00  
 No. 201 18 in. projection from wall, Price each. . . . . 2.50  
 24 in. projection from wall, Price each. . . . . 2.75  
 No. 201 same as No. 200, without scrolls.

All hoist brackets are furnished complete with eye bolts through wall.

When ordering, state thickness of wall.

Write for Discounts

# MANCHESTER IRON WORKS, ST. LOUIS



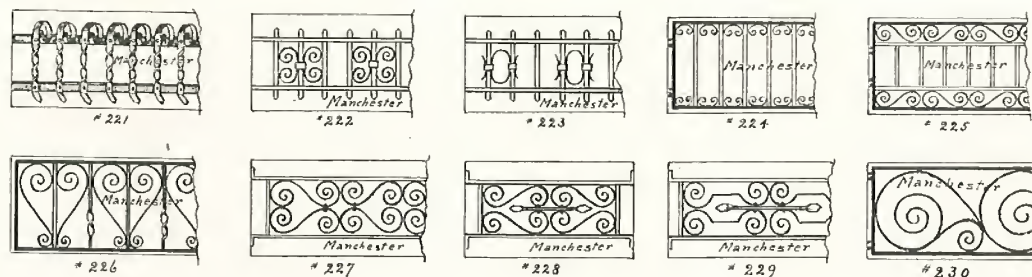
## GUARDS FOR BULK HEADS UNDER SHOW WINDOWS

Nos. 211 to 230 may also be used for vent openings in foundations or under verandas or entrance steps or, in fact, for all small openings where a guard is desired.

| Number                     | Height of opening | 12 in. or less | 14 in. | 16 in. | 18 in. |
|----------------------------|-------------------|----------------|--------|--------|--------|
| No. 211. Price per ft..... |                   | \$ .60         | \$ .62 | \$ .64 | \$ .66 |
| No. 212. Price per ft..... |                   | .50            | .52    | .54    | .56    |
| No. 213. Price per ft..... |                   | .64            | .66    | .68    | .70    |
| No. 214. Price per ft..... |                   | .64            | .66    | .68    | .70    |
| No. 215. Price per ft..... |                   | .80            | .83    | .86    | .90    |
| No. 216. Price per ft..... |                   | .65            | .67    | .70    | .75    |
| No. 217. Price per ft..... |                   | .70            | .73    | .76    | .80    |
| No. 218. Price per ft..... |                   | .70            | .73    | .76    | .80    |
| No. 219. Price per ft..... |                   | .75            | .78    | .80    | .84    |
| No. 220. Price per ft..... |                   | .70            | .70    | .75    | .80    |

Discount depends on quantity and lengths of guards

# MANCHESTER IRON WORKS, ST. LOUIS



## GUARDS FOR BULK HEADS UNDER SHOW WINDOWS

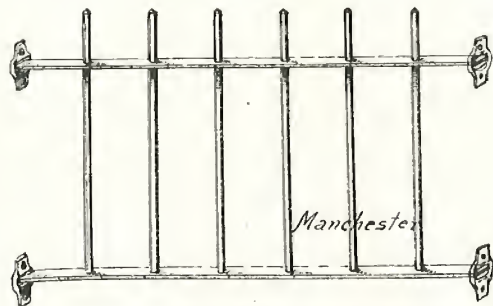
| Number   |                   | Height of opening | 12 in. or less | 14 in. | 16 in. | 18 in. |
|----------|-------------------|-------------------|----------------|--------|--------|--------|
| No. 221. | Price per ft..... |                   | \$ .70         | \$ .72 | \$ .74 | \$ .76 |
| No. 222. | Price per ft..... |                   | .65            | .67    | .69    | .72    |
| No. 223. | Price per ft..... |                   | .65            | .67    | .69    | .72    |
| No. 224. | Price per ft..... |                   | .80            | .82    | .84    | .86    |
| No. 225. | Price per ft..... |                   | 1.00           | 1.05   | 1.10   | 1.20   |
| No. 226. | Price per ft..... |                   | .75            | .78    | .80    | .84    |
| No. 227. | Price per ft..... |                   | .70            | .72    | .75    | .80    |
| No. 228. | Price per ft..... |                   | .72            | .74    | .77    | .82    |
| No. 229. | Price per ft..... |                   | .74            | .76    | .78    | .85    |
| No. 230. | Price per ft..... |                   | .65            | .75    | .85    | .95    |

When ordering, give exact size of opening where guards are to be secured, so that we can make necessary allowance to make guards fit easily and neatly.

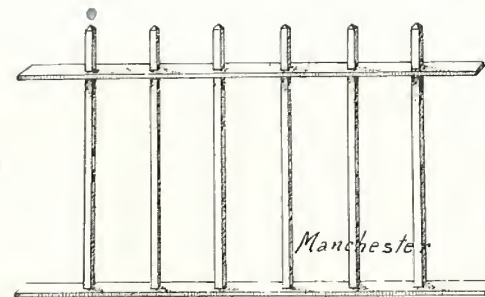
Discount depends on quantity and lengths of guards



# MANCHESTER IRON WORKS, ST. LOUIS.



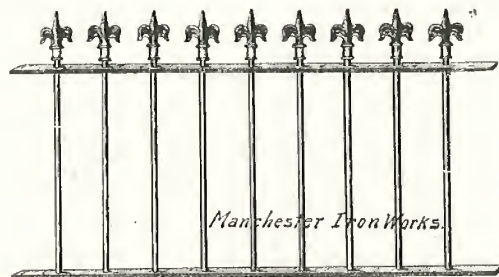
No. 251



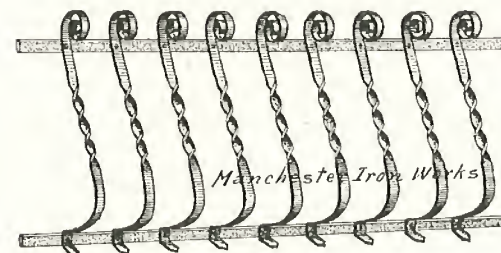
No. 252

## IRON GUARDS FOR BASEMENT WINDOWS

No. 251—Plain Guard, round bars. Price per square ft. of opening:  $\frac{3}{8}$  in. dia. bars, \$ .28  $\frac{1}{2}$  in. dia. bars, \$ .30  $\frac{5}{8}$  in. dia. bars, \$ .35  
 No. 252—Plain Guard, square bars. Price per square ft. of opening:  $\frac{3}{8}$  in. dia. bars, .30  $\frac{1}{2}$  in. dia. bars, .33  $\frac{5}{8}$  in. dia. bars, .40



No. 253



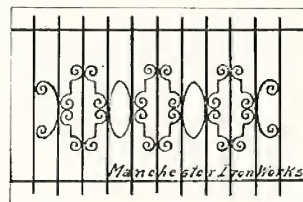
No. 254

No. 253—Spearhead Guard. Price per square ft. of opening:  $\frac{1}{2}$  in. dia. bars.....\$ .44  
 No. 254—Goose Neck Scroll Guard. Price per square ft. of opening:  $\frac{3}{4}$  in. x  $\frac{3}{16}$  in. scrolls..... .60

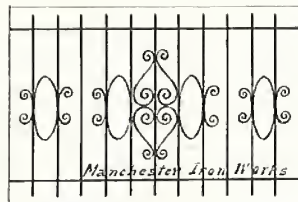
When ordering, give exact size of opening, so that we can make proper allowance to fit guards.

**Discount depends on size and quantity of guards**

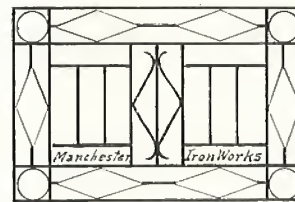
# MANCHESTER IRON WORKS, ST. LOUIS



No. 255



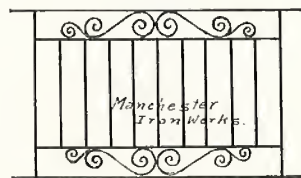
No. 256



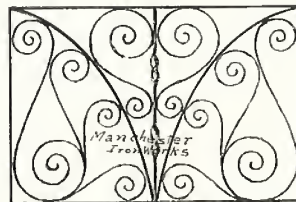
No. 257

## ORNAMENTAL GRILLES FOR BASEMENT WINDOWS

|          |                      |             |
|----------|----------------------|-------------|
| No. 255. | Price per square ft. | .....\$1.00 |
| No. 256. | Price per square ft. | ......80    |
| No. 257. | Price per square ft. | .....1.40   |



No. 258



No. 259



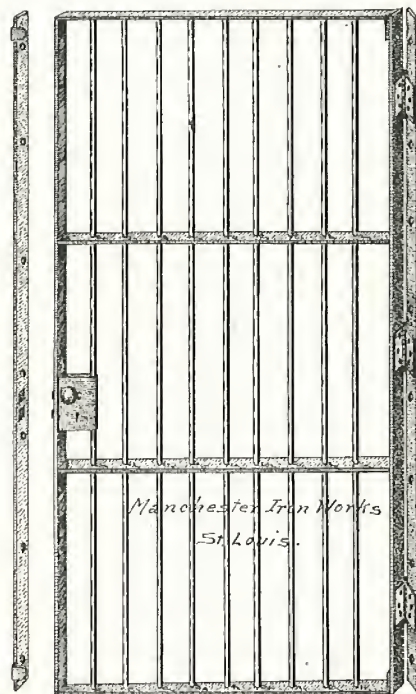
No. 260

|          |                      |            |
|----------|----------------------|------------|
| No. 258. | Price per square ft. | .....\$.90 |
| No. 259. | Price per square ft. | .....1.30  |
| No. 260. | Price per square ft. | .....1.20  |

The minimum charge for above grilles is 6 square ft.

Send sizes and number of grilles for net price. Give exact size of opening, naming width first and then height.

# MANCHESTER IRON WORKS, ST. LOUIS



No. 275

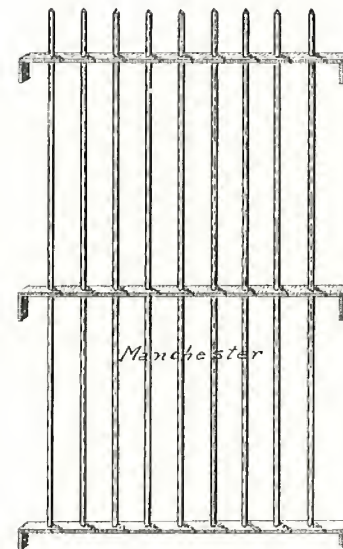
No. 275. Grated Iron Door. The best protection for rear store doors.

Notice that screws cannot be removed when door is closed.

It is easily attached to any door jamb, and has prevented many losses.

No. 276. Round Iron Bar Window Guard, made to be fastened to window frame.

We furnish these guards with cross bars extending into brick joints, where same can be walled in.



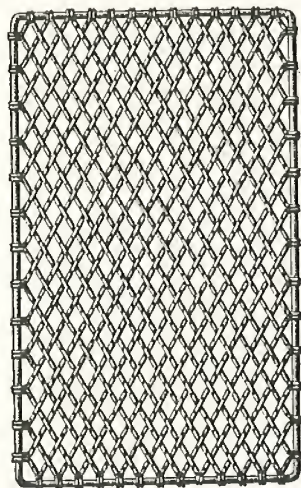
No. 276

Door, Transom and Window Guards are usually made to match. We can furnish same with  $\frac{1}{2}$  in. dia. bars,  $\frac{5}{8}$  in. dia. bars, or  $\frac{3}{4}$  in. dia. bars; usual spacing is 4 in.,  $3\frac{1}{2}$  in., or 3 in., from center to center of bars; frame bars are made in proportion to uprights.

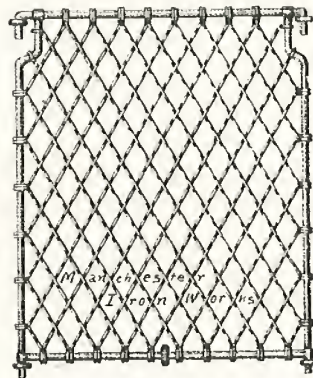
Send exact sizes of openings, for net prices.



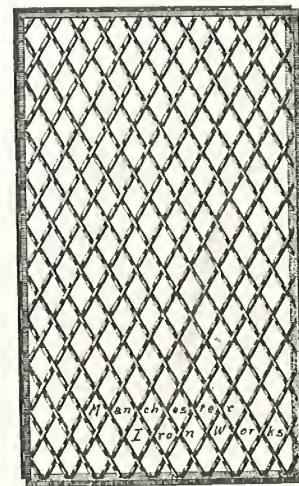
# MANCHESTER IRON WORKS, ST. LOUIS



No. 280



No. 281



No. 282

## WIRE WINDOW AND DOOR GUARDS

No. 280—Wire Window Guard with round iron frame.

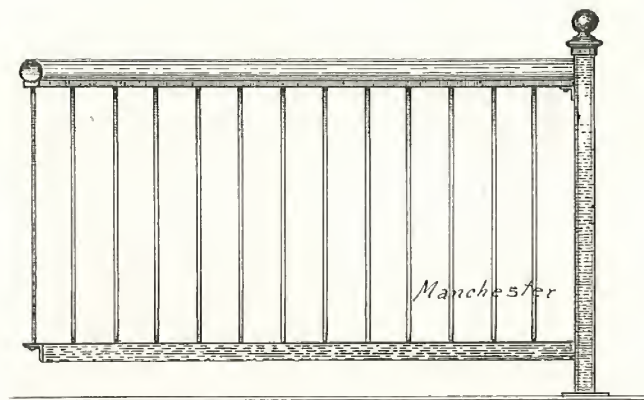
No. 281—Wire Guard for sash door, secured with screw eyes and eye bolt through door.

No. 282—Wire Window Guard with channel frame.

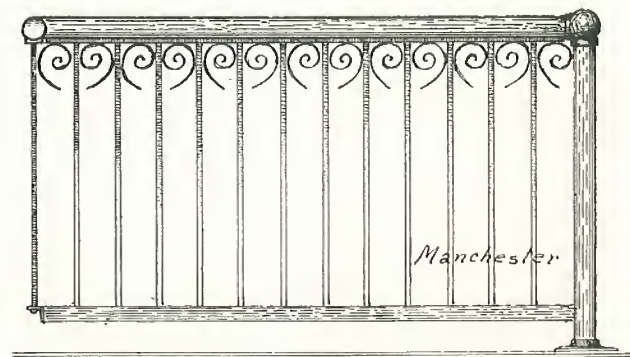
We can furnish wire guards made from No. 14 to No. 6 wire, having any size mesh, from  $\frac{1}{2}$  in. up. Ordinary wire guards are made from No. 11, being  $\frac{1}{8}$  in. diameter, or from No. 10, being  $\frac{9}{64}$  in. diameter, and are usually furnished in  $1\frac{1}{4}$  in. mesh with  $\frac{3}{8}$  in. diameter round iron frame. All our wire guards are made from galvanized wire. Above cuts show diamond mesh, but we can furnish square mesh when desired.

When ordering, or asking for prices, give exact size of openings where guards are to be secured, stating width first, then height; also state number of wire, size of mesh, and whether diamond or square; size and kind of frame, and whether guards are to be stapled in place, or are to have lugs for fastening with screws.

# MANCHESTER IRON WORKS, ST. LOUIS



No. 301



No. 302

## IRON RAILINGS

| Number   | Size of Balusters                         | Price per lineal ft. |
|----------|---|----------------------|
| No. 301. | $\frac{1}{2}$ in. x $\frac{1}{2}$ in..... | \$1.30               |
|          | $\frac{5}{8}$ in. x $\frac{5}{8}$ in..... | 1.60                 |
|          | $\frac{3}{4}$ in. x $\frac{3}{4}$ in..... | 1.90                 |

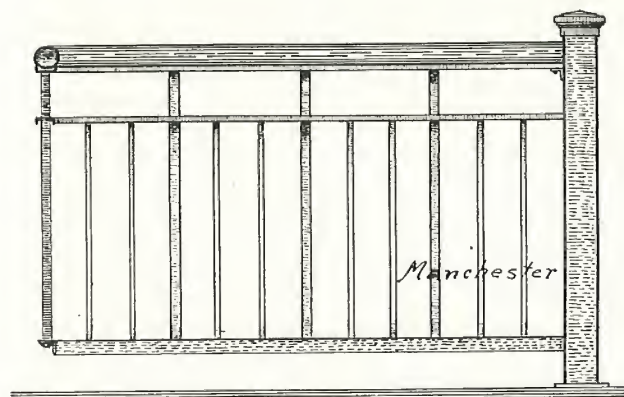
|               |   |             |
|---------------|---|-------------|
| Post No. 301. | 2 in. x 2 in.....                           | \$1.50 each |
|               | $2\frac{1}{2}$ in. x $2\frac{1}{2}$ in..... | 1.75 each   |
|               | 3 in. x 3 in.....                           | 2.00 each   |

| Number   | Size of Balusters                         | Price per lineal ft. |
|----------|---|----------------------|
| No. 302. | $\frac{1}{2}$ in. x $\frac{1}{2}$ in..... | \$1.50               |
|          | $\frac{5}{8}$ in. x $\frac{5}{8}$ in..... | 1.80                 |
|          | $\frac{3}{4}$ in. x $\frac{3}{4}$ in..... | 2.20                 |

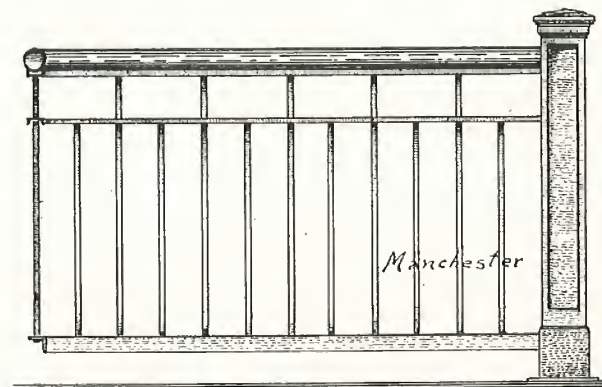
|               |                                   |            |
|---------------|-----------------------------------|------------|
| Post No. 302. | $1\frac{1}{2}$ in. dia. pipe..... | \$.85 each |
|               | 2 in. dia. pipe.....              | 1.00 each  |

Railings may be furnished with or without posts, as desired. Where railings end against masonry, ends of rails may be left longer, to extend into wall; length of railing to be figured to wall only, or railings may be provided with angle connections or flat end bars to allow screwing to wall with lag screws, as desired.

# MANCHESTER IRON WORKS, ST. LOUIS



No. 303



No. 304

## IRON RAILINGS

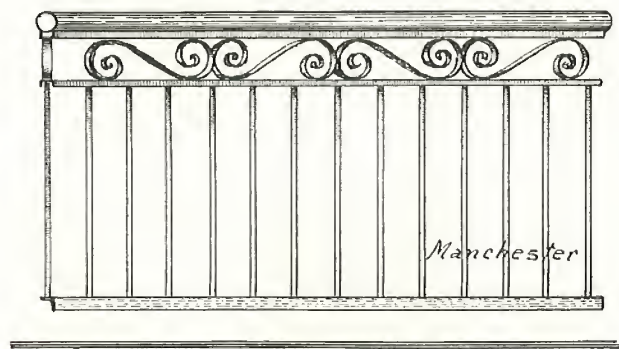
| Number        | Size of Balusters   | Price per lineal ft. |
|---------------|---|----------------------|
| No. 303.      | $\frac{1}{2}$ in. x $\frac{1}{2}$ in.....   | \$1.60               |
|               | $\frac{5}{8}$ in. x $\frac{5}{8}$ in.....   | 1.90                 |
|               | $\frac{1}{2}$ in. x $\frac{1}{2}$ in. and $\frac{3}{4}$ in. x $\frac{3}{4}$ in..... | 2.00                 |
| <hr/>         |   |                      |
| Post No. 303. | 3 in. x 3 in.....   | \$2.00               |

| Number        | Size of Balusters   | Price per lineal ft. |
|---------------|---|----------------------|
| No. 304.      | $\frac{1}{2}$ in. x $\frac{1}{2}$ in.....   | \$1.65               |
|               | $\frac{5}{8}$ in. x $\frac{5}{8}$ in.....   | 1.95                 |
|               | $\frac{1}{2}$ in. x $\frac{1}{2}$ in. and $\frac{3}{4}$ in. x $\frac{3}{4}$ in..... | 2.05                 |
| <hr/>         |   |                      |
| Post No. 304. | 4 in. x 4 in.....   | \$5.00               |

Write for Discounts



# MANCHESTER IRON WORKS, ST. LOUIS



No. 305



No. 306

## IRON RAILINGS

| Number   | Size of Balusters                         | Price per lineal ft. |
|----------|---|----------------------|
| No. 305. | $\frac{1}{2}$ in. x $\frac{1}{2}$ in..... | \$1.65               |
|          | $\frac{3}{8}$ in. x $\frac{3}{4}$ in..... | 1.70                 |
|          | $\frac{5}{8}$ in. x $\frac{5}{8}$ in..... | 1.95                 |
|          | $\frac{3}{4}$ in. x $\frac{3}{4}$ in..... | 2.25                 |

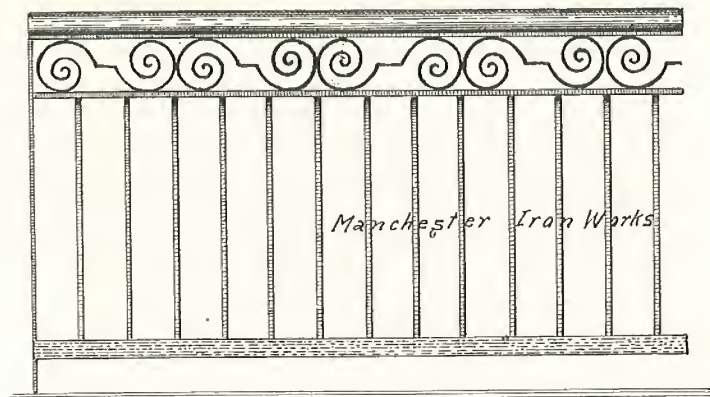
| Number   | Size of Balusters                         | Price per lineal ft. |
|----------|---|----------------------|
| No. 306. | $\frac{1}{2}$ in. x $\frac{1}{2}$ in..... | \$1.65               |
|          | $\frac{3}{8}$ in. x $\frac{3}{4}$ in..... | 1.70                 |
|          | $\frac{5}{8}$ in. x $\frac{5}{8}$ in..... | 1.95                 |
|          | $\frac{3}{4}$ in. x $\frac{3}{4}$ in..... | 2.25                 |

We can furnish other hand rails, in place of pipe, as shown, cast iron moulding, wrought iron moulding, square pipe, channel, or flat bar cap. If no special hand rail is mentioned, we furnish pipe hand rails, as shown. Lower rail may be channel, in place of angle, if desired.

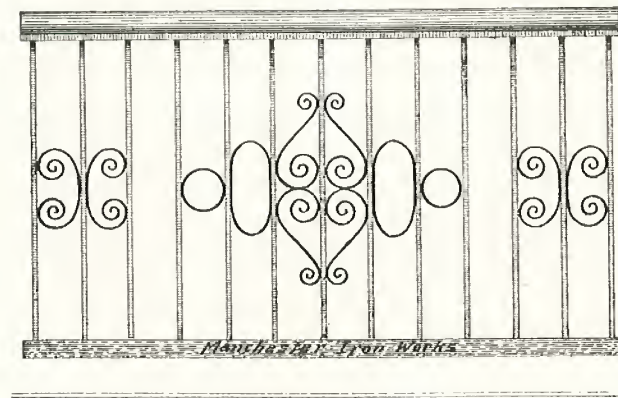
**Write for Discounts**



# MANCHESTER IRON WORKS, ST. LOUIS



No. 307



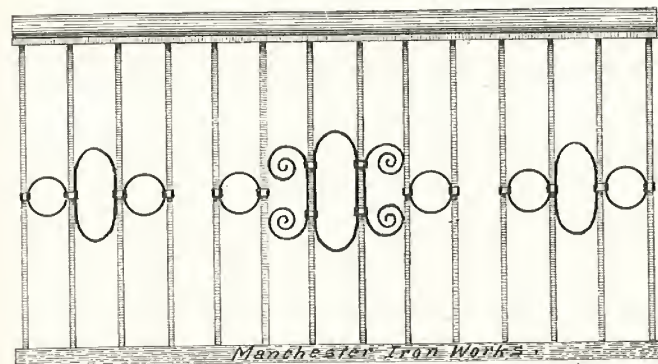
No. 308

## IRON RAILINGS

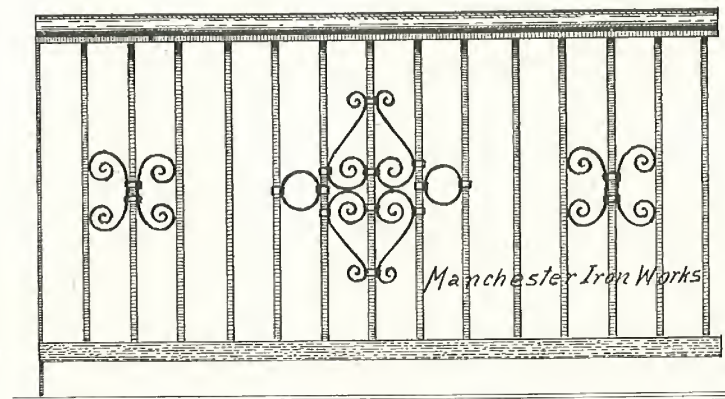
| Number   | Size of<br>Balusters                      | Price per<br>lineal ft. |
|----------|---|-------------------------|
| No. 307. | $\frac{1}{2}$ in. x $\frac{1}{2}$ in..... | \$1.70                  |
|          | $\frac{3}{8}$ in. x $\frac{3}{4}$ in..... | 1.75                    |
|          | $\frac{5}{8}$ in. x $\frac{5}{8}$ in..... | 2.00                    |
|          | $\frac{3}{4}$ in. x $\frac{3}{4}$ in..... | 2.30                    |

| Number   | Size of<br>Balusters                      | Price per<br>lineal ft. |
|----------|---|-------------------------|
| No. 308. | $\frac{1}{2}$ in. x $\frac{1}{2}$ in..... | \$1.65                  |
|          | $\frac{3}{8}$ in. x $\frac{3}{4}$ in..... | 1.70                    |
|          | $\frac{5}{8}$ in. x $\frac{5}{8}$ in..... | 2.00                    |
|          | $\frac{3}{4}$ in. x $\frac{3}{4}$ in..... | 2.30                    |

# MANCHESTER IRON WORKS, ST. LOUIS



No. 309



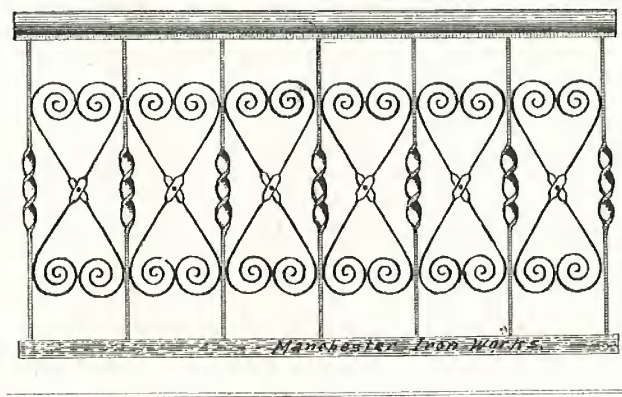
No. 310

## IRON RAILINGS

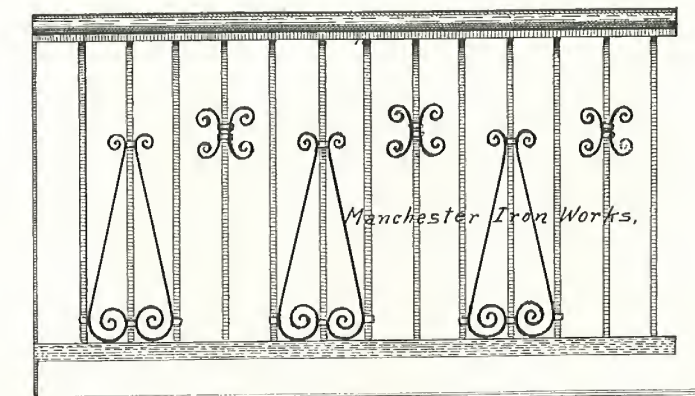
| Number   | Size of Balusters                         | Price per lineal ft. |
|----------|---|----------------------|
| No. 309. | $\frac{1}{2}$ in. x $\frac{1}{2}$ in..... | \$1.60               |
|          | $\frac{3}{8}$ in. x $\frac{3}{4}$ in..... | 1.65                 |
|          | $\frac{5}{8}$ in. x $\frac{5}{8}$ in..... | 1.95                 |
|          | $\frac{3}{4}$ in. x $\frac{3}{4}$ in..... | 2.25                 |

| Number   | Size of Balusters                         | Price per lineal ft. |
|----------|---|----------------------|
| No. 310. | $\frac{1}{2}$ in. x $\frac{1}{2}$ in..... | \$1.65               |
|          | $\frac{3}{8}$ in. x $\frac{3}{4}$ in..... | 1.70                 |
|          | $\frac{5}{8}$ in. x $\frac{5}{8}$ in..... | 1.95                 |
|          | $\frac{3}{4}$ in. x $\frac{3}{4}$ in..... | 2.25                 |

# MANCHESTER IRON WORKS, ST. LOUIS



No. 311



No. 312

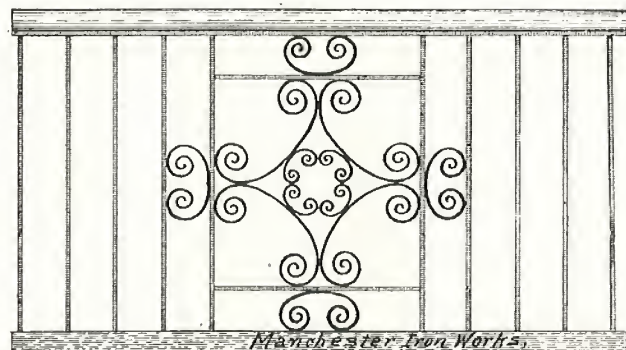
## IRON RAILINGS

| Number   | Size of Balusters                          | Price per lineal ft. |
|----------|--|----------------------|
| No. 311. | $\frac{3}{16}$ in. x $\frac{3}{4}$ in..... | \$1.70               |
|          | $\frac{3}{16}$ in. x 1 in.....             | 2.00                 |
|          | $\frac{1}{4}$ in. x $\frac{3}{4}$ in.....  | 1.85                 |
|          | $\frac{1}{4}$ in. x 1 in.....              | 2.10                 |

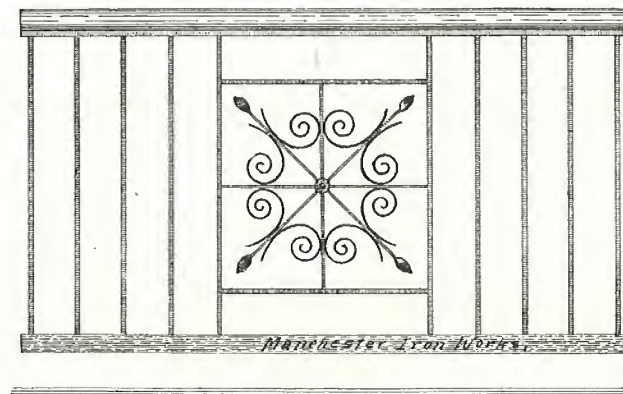
| Number   | Size of Balusters                         | Price per lineal ft. |
|----------|---|----------------------|
| No. 312. | $\frac{1}{2}$ in. x $\frac{1}{2}$ in..... | \$1.80               |
|          | $\frac{3}{8}$ in. x $\frac{3}{4}$ in..... | 2.00                 |
|          | $\frac{1}{2}$ in. x $\frac{3}{4}$ in..... | 2.20                 |
|          | $\frac{1}{2}$ in. x 1 in.....             | 3.50                 |



# MANCHESTER IRON WORKS, ST. LOUIS



No. 317



No. 318

## IRON RAILINGS

| Number   | Size of<br>Balusters                      | Price per<br>lineal ft. | Price per<br>Panel |
|----------|---|-------------------------|--------------------|
| No. 317. | $\frac{3}{8}$ in. x $\frac{3}{4}$ in..... | \$1.40                  | \$1.20             |
|          | $\frac{3}{8}$ in. x 1 in.....             | 1.70                    | 1.30               |
|          | $\frac{1}{2}$ in. x 1 in.....             | 2.00                    | 1.40               |

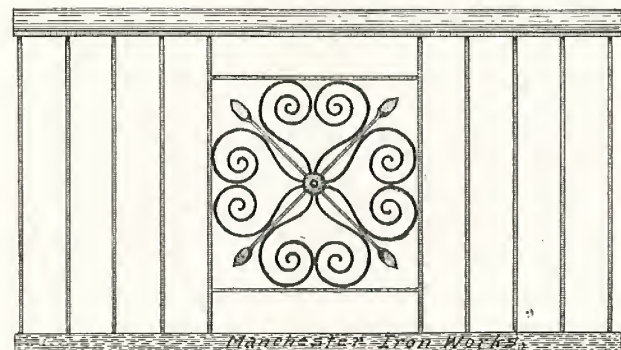
| Number   | Size of<br>Balusters                      | Price per<br>lineal ft. | Price per<br>Panel |
|----------|---|-------------------------|--------------------|
| No. 318. | $\frac{3}{8}$ in. x $\frac{3}{4}$ in..... | \$1.40                  | \$1.30             |
|          | $\frac{3}{8}$ in. x 1 in.....             | 1.70                    | 1.40               |
|          | $\frac{1}{2}$ in. x 1 in.....             | 2.00                    | 1.60               |

**Note:** These Railings may have one or more scroll panels in each section, or they may be entirely of panels. Price to be computed in all cases per lineal ft. of railing, plus the price of each panel used; for instance, six ft. of No. 318, of  $\frac{3}{8}$  in. x  $\frac{3}{4}$  in. balusters, with three panels, would cost \$8.40, plus \$3.90, total \$12.30 list, subject to discount.

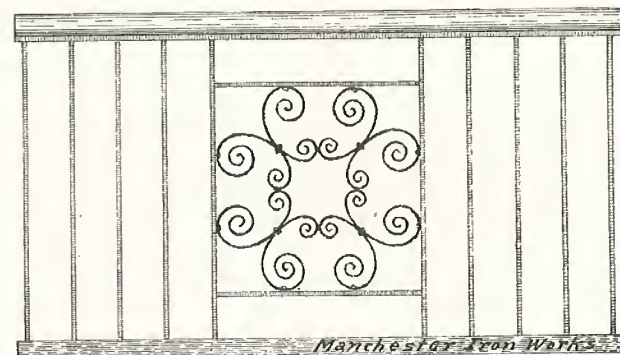
**Write for Discounts**



# MANCHESTER IRON WORKS, ST. LOUIS



No. 319



No. 320

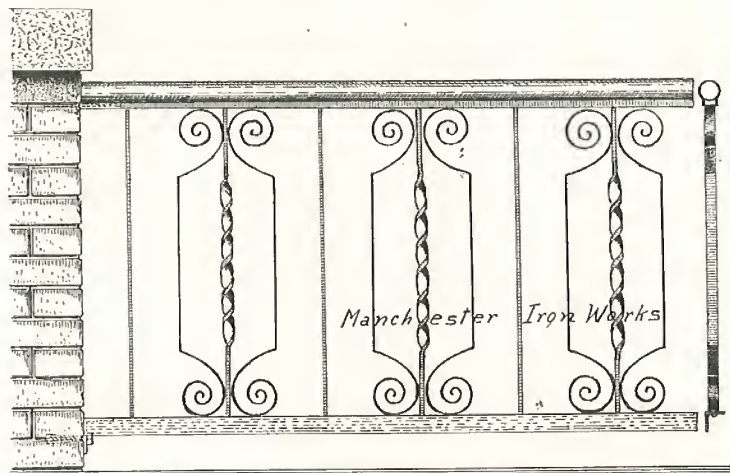
## IRON RAILINGS

| Number   | Size of<br>Balusters                      | Price per<br>lineal ft. | Price per<br>Panel |
|----------|---|-------------------------|--------------------|
| No. 319. | $\frac{3}{8}$ in. x $\frac{3}{4}$ in..... | \$1.40                  | \$1.50             |
|          | $\frac{3}{8}$ in. x 1 in.....             | 1.70                    | 1.60               |
|          | $\frac{1}{2}$ in. x 1 in.....             | 2.00                    | 1.80               |

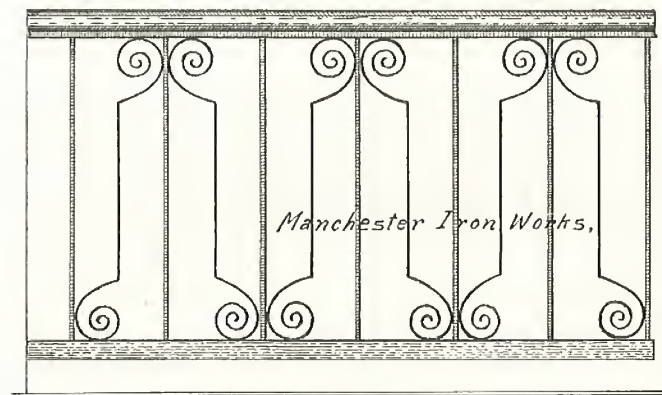
See note, page 39.

| Number   | Size of<br>Balusters                      | Price per<br>lineal ft. | Price per<br>Panel |
|----------|---|-------------------------|--------------------|
| No. 320. | $\frac{3}{8}$ in. x $\frac{3}{4}$ in..... | \$1.40                  | \$1.00             |
|          | $\frac{3}{8}$ in. x 1 in.....             | 1.70                    | 1.10               |
|          | $\frac{1}{2}$ in. x 1 in.....             | 2.00                    | 1.25               |

# MANCHESTER IRON WORKS, ST. LOUIS



No. 325



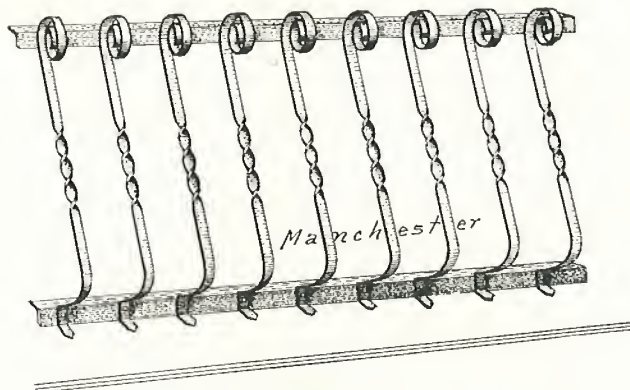
No. 326

## IRON RAILINGS

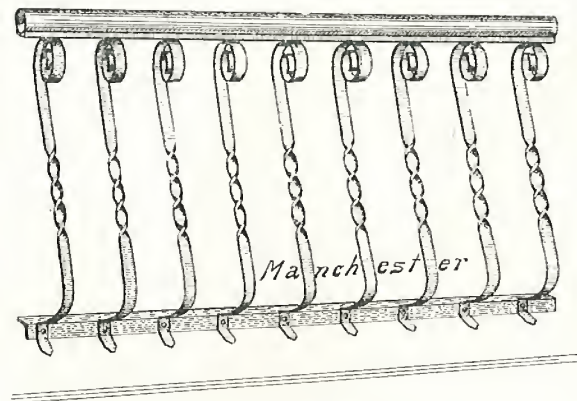
| Number   | Size of Balusters                      | Size of Scrolls                            | Price per lineal ft. |
|----------|--|--|----------------------|
| No. 325. | $\frac{3}{8}$ in. x $\frac{3}{4}$ in., | $\frac{3}{16}$ in. x $\frac{3}{4}$ in..... | \$1.65               |
|          | $\frac{3}{8}$ in. x 1 in.,             | $\frac{3}{16}$ in. x 1 in.....             | 1.85                 |
|          | $\frac{3}{8}$ in. x $\frac{3}{4}$ in., | $\frac{1}{4}$ in. x $\frac{3}{4}$ in.....  | 1.90                 |
|          | $\frac{3}{8}$ in. x 1 in.,             | $\frac{1}{4}$ in. x 1 in.....              | 2.20                 |

| Number   | Size of Balusters                      | Size of Scrolls                            | Price per lineal ft. |
|----------|--|--|----------------------|
| No. 326. | $\frac{3}{8}$ in. x $\frac{3}{4}$ in., | $\frac{3}{16}$ in. x $\frac{3}{4}$ in..... | \$1.60               |
|          | $\frac{3}{8}$ in. x 1 in.,             | $\frac{3}{16}$ in. x 1 in.....             | 1.80                 |
|          | $\frac{3}{8}$ in. x $\frac{3}{4}$ in., | $\frac{1}{4}$ in. x $\frac{3}{4}$ in.....  | 1.85                 |
|          | $\frac{3}{8}$ in. x 1 in.,             | $\frac{1}{4}$ in. x 1 in.....              | 2.10                 |

# MANCHESTER IRON WORKS, ST. LOUIS



No. 327



No. 328

## IRON RAILINGS

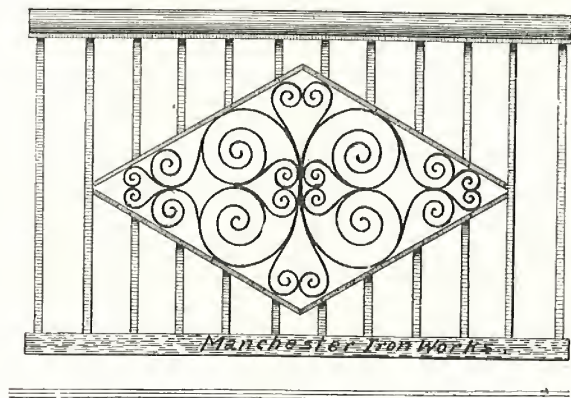
| Number   | Size of<br>Scrolls                         | Price per<br>lineal ft. |
|----------|--|-------------------------|
| No. 327. | $\frac{1}{8}$ in. x 1 in.....              | \$1.30                  |
|          | $\frac{3}{16}$ in. x $\frac{3}{4}$ in..... | 1.40                    |
|          | $\frac{3}{16}$ in. x 1 in.....             | 1.50                    |
|          | $\frac{1}{4}$ in. x $\frac{3}{4}$ in.....  | 1.70                    |
|          | $\frac{1}{4}$ in. x 1 in.....              | 1.90                    |

| Number   | Size of<br>Scrolls                         | Price per<br>lineal ft. |
|----------|--|-------------------------|
| No. 328. | $\frac{1}{8}$ in. x 1 in.....              | \$1.45                  |
|          | $\frac{3}{16}$ in. x $\frac{3}{4}$ in..... | 1.55                    |
|          | $\frac{3}{16}$ in. x 1 in.....             | 1.65                    |
|          | $\frac{1}{4}$ in. x $\frac{3}{4}$ in.....  | 1.85                    |
|          | $\frac{1}{4}$ in. x 1 in.....              | 2.05                    |

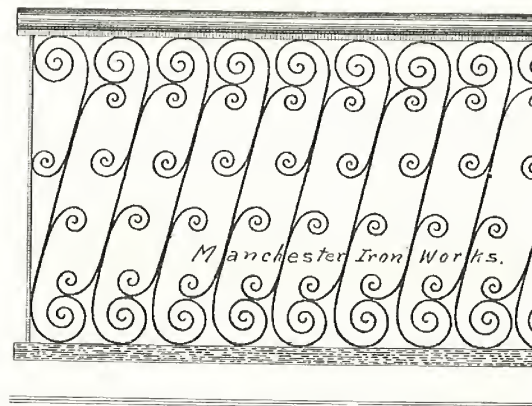
**Note:** If these railings are returned at right angles, without posts, corner scroll is set diagonally, and support and fastening to floor is provided without extra charge.

# MANCHESTER IRON WORKS, ST. LOUIS

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No. 329



No. 330

## IRON RAILINGS

No. 329. Price on application.

When writing for price, give measurement of railing, size of bars, and scrolls wanted and number of scrolled diamond panels to be used.

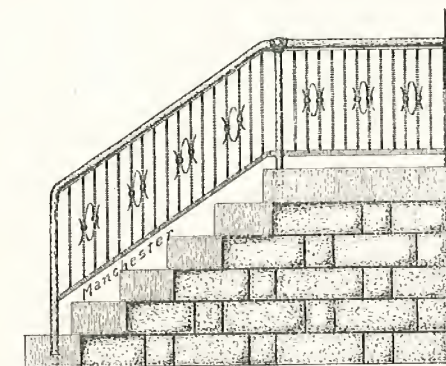
No. 330. Price on application.

When asking price, state measurements of railing and size of bars for scrolls.

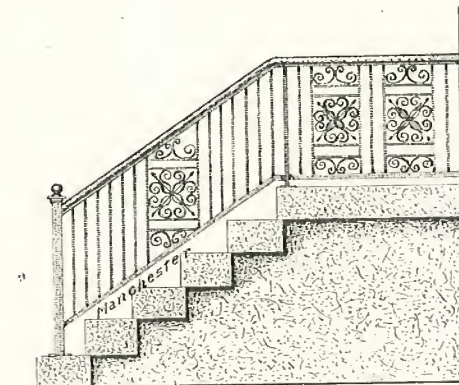
If you prefer other designs, send us sketch and description and we shall quote our lowest price.



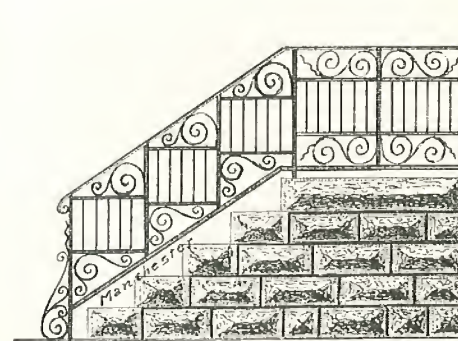
# MANCHESTER IRON WORKS, ST. LOUIS



No. 335



No. 336



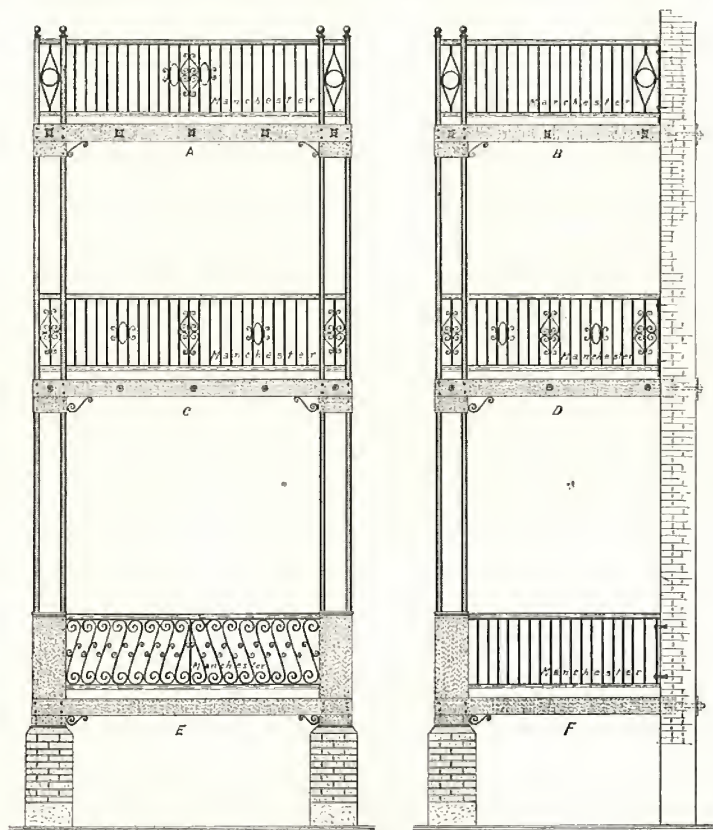
No. 337

## ENTRANCE OR STEP RAILS

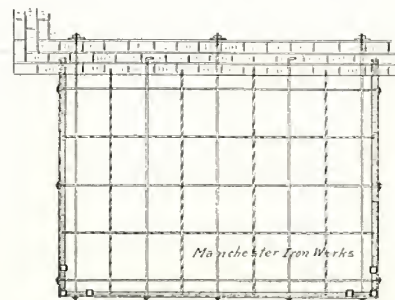
Nos. 335, 336 and 337 show different methods of making step rails. Designs Nos. 301, 302, 303, 304, 305, 306, 307 and 309 may also be used on steps.

When writing for prices, give measurements of steps and porch, indicating material of which steps and porch are made, and design selected.

# MANCHESTER IRON WORKS, ST. LOUIS



No. 340



No. 341

## STEEL AND CONCRETE PORCHES

No. 340. All steel and concrete porch may be put up on old as well as new buildings, one, two or more stories, as required. Any one design or different combinations may be used.

The floors have strong steel channel frames, well braced and anchored through wall, and are carried on six square pipe columns.

These porches are very strong and durable, and do not prevent light from entering windows.

No. 341 shows plan of frame, arrangement of columns, and our method of reinforcing the concrete slab.

We furnish these porches complete with all bolts, anchors and reinforcing rods. They are well fitted and easily set in place by any mechanic. When desired, brick or other material may be used for columns.

When asking for price, state design, size of porch desired, and number of stories.

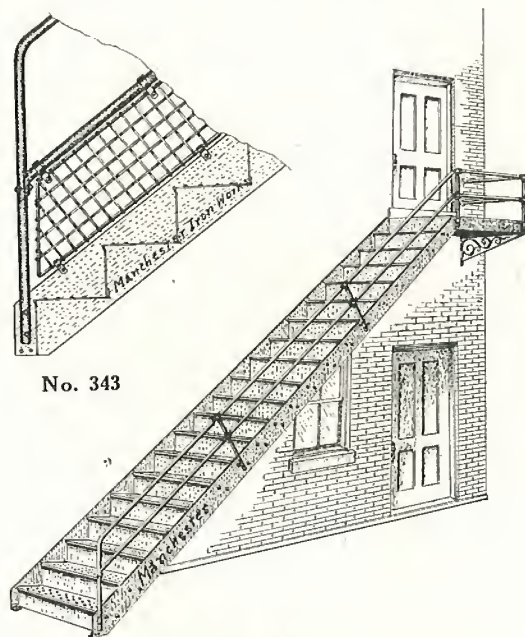
We can furnish same f. o. b. cars, or steel work set in place, or porches entirely complete, including concrete.

# MANCHESTER IRON WORKS, ST. LOUIS

No. 343 shows construction of stairs and our method of securing wire guard rail to same for protection of smaller children.

Stairs can be furnished with or without wire guard rail.

When ordering wire guards separate, state accurate dimensions between rails and posts, size of posts and rails and run and rise of stairs.



No. 343

No. 342

## OUTSIDE STEEL STAIRS

Our stairs are giving universal satisfaction, being strong and durable, as well as attractive in appearance.

| Width of stairs | Rise from ground | Price f. o. b. cars |
|-----------------|------------------|---------------------|
| 3 ft.           | 12 ft.           | \$100.00            |
| 3 ft.           | 14 ft.           | 110.00              |
| 3 ft.           | 16 ft.           | 120.00              |
| 3½ ft.          | 12 ft.           | 110.00              |
| 3½ ft.          | 14 ft.           | 120.00              |
| 3½ ft.          | 16 ft.           | 130.00              |
| 4 ft.           | 12 ft.           | 116.00              |
| 4 ft.           | 14 ft.           | 126.00              |
| 4 ft.           | 16 ft.           | 136.00              |

Write for Discounts

Prices include platform four ft. long, and stairs complete, with stringers, treads and risers, pipe railing and all necessary supporting brackets.

For wire guard rail, add 50 cents per ft. of rise to list.

**Specifications**—Stringers are 8 in. wide, treads are ca. 10 in. wide and have ca. 8 in. of riser, formed of one piece of steel with round projecting nosing; treads are roughened to prevent slipping; the platform is made of solid sheet steel on channel frame, well stiffened; the railing is made from standard pipe, with standard malleable railing fittings.

When ordering, state rise from ground to underside of door sill, thickness of wall, width of stairs, size of platform desired, and show rough sketch of doors or windows and stairs.



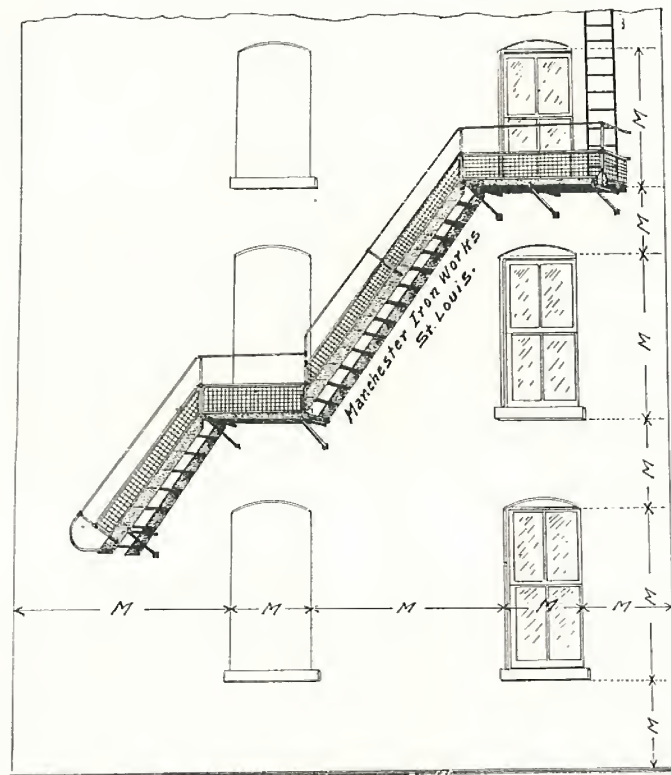
# MANCHESTER IRON WORKS, ST. LOUIS

## STAIR FIRE ESCAPES

No. 365—Typical View of Standard Stair Fire Escape.

Fire Escapes have landings or platforms at one or more windows on each floor, with stairs connecting same, and extending to within nine ft. of the ground or solid to the ground for schools, hospitals, assembly halls, etc. It is advisable to have a ladder on the upper landing for ready access to roof in case of fire.

For further description, see next page.



No. 365

Price on application, f. o. b. cars, or erected in place

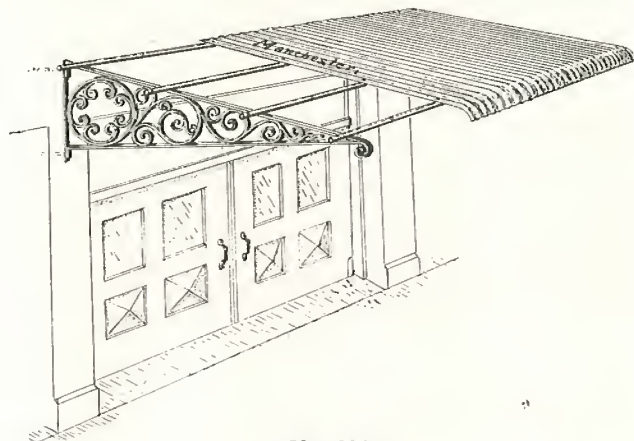
When ordering or writing for price, send sketch, giving outline of fire escape, showing measurements, as indicated by letter M, also stating thickness and material of wall.

It is very important to describe belt courses, water-tables or other projections of wall, if any. If ladder to roof is desired, state distance to roof and projection of cornice, if any, and style of roof.

We ship in convenient parts, with instructions, so that any mechanic can erect same quickly.



# MANCHESTER IRON WORKS, ST. LOUIS



No. 394

No. 394—Canopy, section removed to show brackets and purlins.

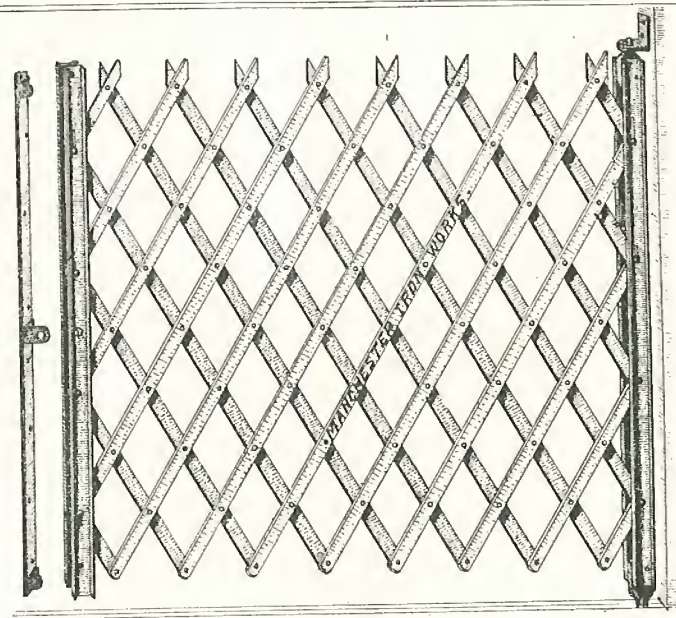
Composed of ornamental steel brackets, pipe purlins and corrugated iron; a very practical shelter, easily secured to any building; for entrances, store fronts, loading platforms, etc.

We furnish canopies from four ft. to ten ft. wide, any length required, brackets being spaced about eight ft. apart.

Covering may be curved on edge, as shown, straight, or entirely curved on any radius desired.

Where more light is needed, we can furnish wired glass roof.

Send measurements for price.



No. 400

No. 400—Iron Folding Gate.

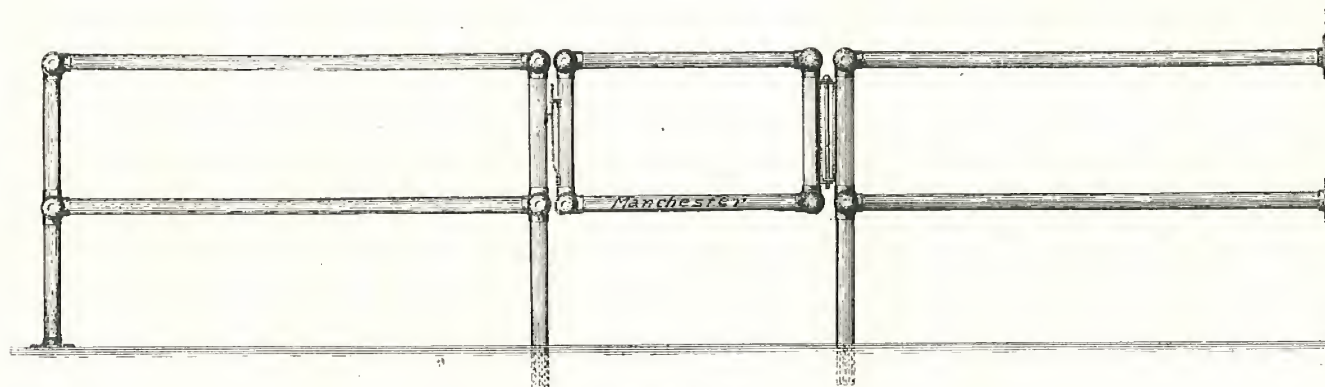
Folding gates are one of the best means of closing vestibules of churches, theaters, or stores, or they may be used at factory doors, when doors are kept open. They are easily attached to jambs or piers, and fold into a small space, swinging close to jambs.

Gates are furnished single, as shown, or in pairs, if opening to be closed is wide. These gates are pivoted at floor in steel socket, thereby adding no weight to jamb or pier; may be locked with pin or padlock, as desired.

Do not hesitate to write for prices.

# MANCHESTER IRON WORKS, ST. LOUIS

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No. 415

## STANDARD PIPE RAILINGS

Pipe railings are made of standard pipe and malleable railing fittings; are furnished any diameter,  $1\frac{5}{8}$  in. and  $1\frac{7}{8}$  in. outside diameter being mostly used. Railings may be secured to floor and walls by means of flanges, as shown at ends, or they may be let into concrete, as shown at gate posts. Gate is shown with plain hinge bar and spring catch; but we can furnish same with self-closing spring hinges, holding gate in place without latch.

We can furnish single, double or triple rails, straight or curved.

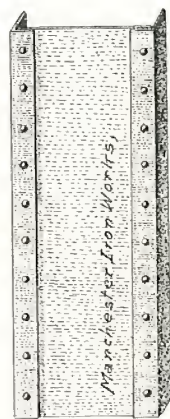
Long pipe railings are shipped in convenient sections, so they may be connected easily.

We shall be pleased to quote you our lowest price on any sketch you may send.

# MANCHESTER IRON WORKS, ST. LOUIS



No. 501



No. 502



No. 503



No. 504



No. 505

## STEEL AND CAST IRON WHEEL GUARDS

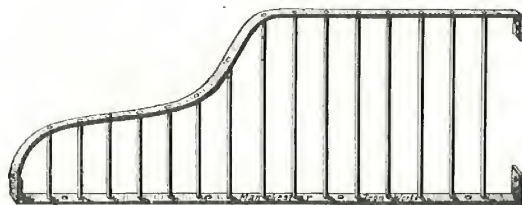
|   |                  | Price<br>f. o. b. cars |
|---|------------------|------------------------|
| No. 501—Steel Angle Corner Guard, 4 in. x 4 in..... | 42 in. high..... | \$1.75                 |
| No. 502—Steel Jamb Guard, 13 in. wide.....          | 42 in. high..... | 3.75                   |
| No. 502—Steel Jamb Guard, 18 in. wide.....          | 42 in. high..... | 5.00                   |
| No. 503—Cast Iron Wheel Guard, 12 in. wide.....     | 26 in. high..... | 3.50                   |
| No. 504—Cast Iron Wheel Guard, 13 in. wide.....     | 42 in. high..... | 5.00                   |
| No. 505—Cast Iron Corner Guard.....                 | 42 in. high..... | 5.50                   |

Anchors for securing guards to walls are included.

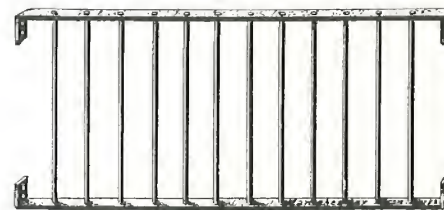
Discount depends on number of guards ordered



# MANCHESTER IRON WORKS, ST. LOUIS



No. 510



No. 511

## STALL GUARDS

No. 510—O. G. Stall Guard; 24 in. high, 6 ft. long.

No. 511—Box Stall Guard; 24 in. high, any length.

| Size of<br>Bars         | Size of<br>Frame                       | Price<br>f. o. b. cars |
|-------------------------|--|------------------------|
| $\frac{3}{8}$ in. round | $1\frac{1}{2}$ in. x $\frac{1}{4}$ in. | \$5.00 each            |
| $\frac{1}{2}$ in. round | $1\frac{1}{2}$ in. x $\frac{3}{8}$ in. | 6.00 each              |
| $\frac{5}{8}$ in. round | 2 in. x $\frac{3}{8}$ in.              | 7.20 each              |

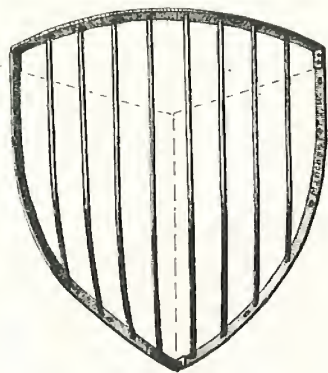
| Size of<br>Bars         | Size of<br>Frame                       | Price per<br>lineal ft. |
|-------------------------|--|-------------------------|
| $\frac{3}{8}$ in. round | $1\frac{1}{2}$ in. x $\frac{1}{4}$ in. | \$ .75                  |
| $\frac{1}{2}$ in. round | $1\frac{1}{2}$ in. x $\frac{3}{8}$ in. | .90                     |
| $\frac{5}{8}$ in. round | 2 in. x $\frac{3}{8}$ in.              | 1.10                    |

We can furnish either style any size desired. They are by far the best partitions that can be placed between stalls, being strong, airy, sanitary and easily kept painted.

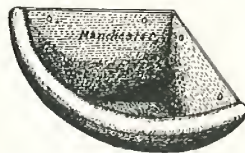
**State number and size wanted when writing for discount**



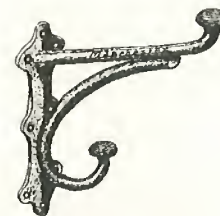
# MANCHESTER IRON WORKS, ST. LOUIS



No. 517



No. 518



No. 519

## STABLE FITTINGS

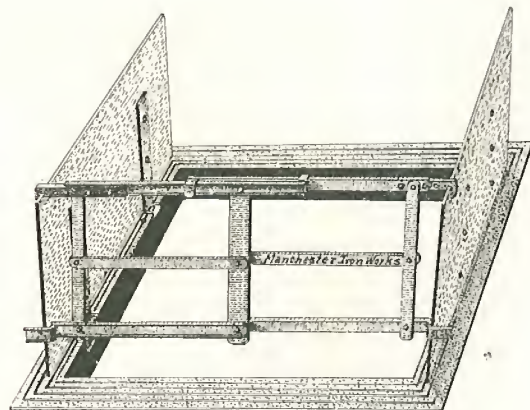
|   |                   |
|---|-------------------|
| No. 517—Wrought Iron Hay Rack, $\frac{1}{2}$ in. round bars, $1\frac{1}{4}$ in. x $\frac{1}{4}$ in frame..... | Price \$3.00 each |
| No. 518—Cast Iron Feed Box, rolled edge.....  | Price 2.50 each   |
| No. 519—Cast Iron Harness Hook, 14 in. projection.....  | Price .75 each    |
| No. 517a—Hay Rack, made on one-half circle, wrought or cast iron.....   | Price 5.00 each   |

These fittings are the most practical, and will save many times their cost in feed or harness in a short time.

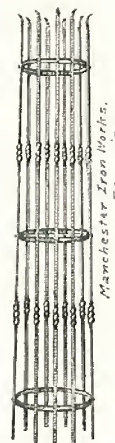
We can furnish other shapes when desired.

**Write for Discounts**

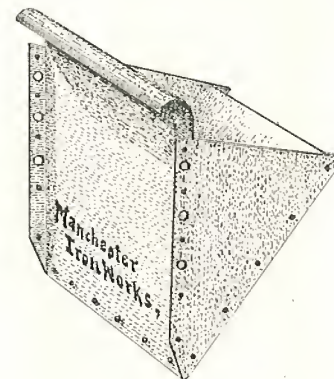
# MANCHESTER IRON WORKS, ST. LOUIS



No. 570



No. 582



No. 597

No. 570—**CELLAR DOOR GUARD**, folding; the best way to prevent accidents; made to fit any doors. State size of doors and distance between same, top and bottom, when open. Price, f. o. b. cars.....\$2.50

No. 582—**TREE GUARD**, of  $\frac{3}{4}$  in.  $\times$   $\frac{3}{16}$  in. steel; diameter at top, 11 in.; at bottom, 13 in.; 5 ft. 6 in. high; substantially made. Price, f. o. b. cars.....\$3.60

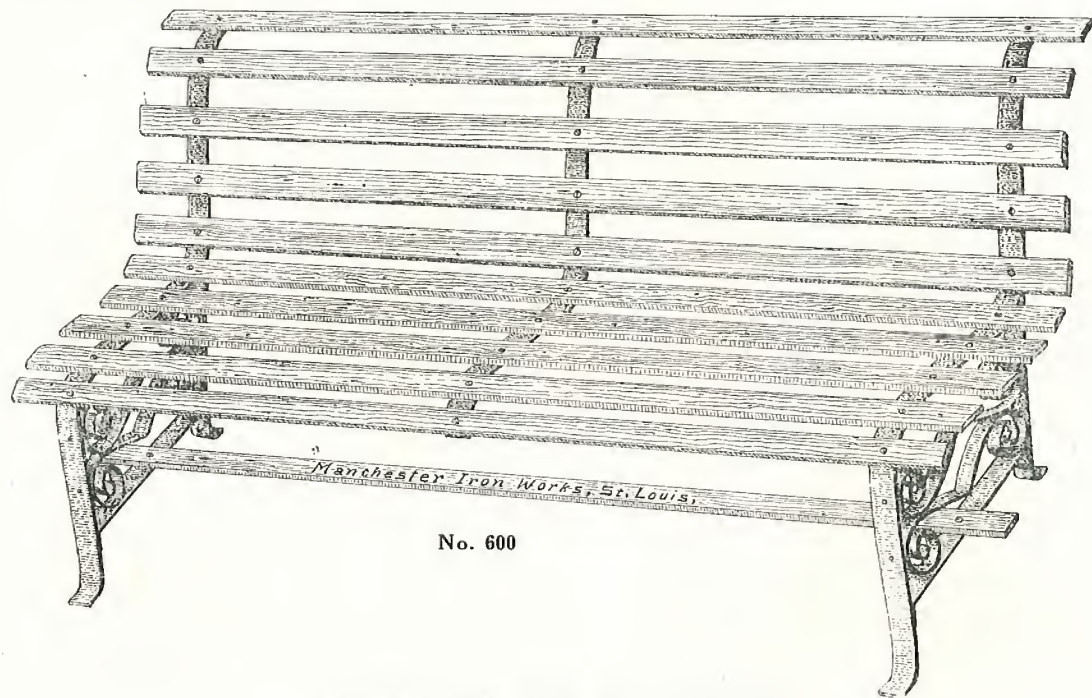
No. 597—**ELEVATOR BUCKET**, of No. 14 steel and heavier. Send us sample of worn out buckets, and we will name you price on same in any quantity.

We can furnish any other sheet steel construction, such as bins, grain chutes, stacks, etc.

Write for Prices

# MANCHESTER IRON WORKS, ST. LOUIS

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No. 600

## LAWN BENCHES OR SETTEES

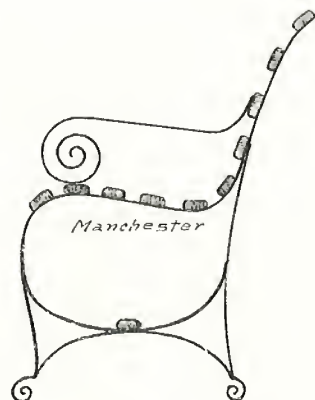
No. 600—Illustrates our lawn benches. They are made on lines to secure the most comfortable, strong and durable seat, and they are an ornament as well as a convenience on any porch or lawn. Benches are furnished in various styles, shown on page 57. As lumber is easily obtained in many places, we quote prices per set of irons, composed of two stands and one center brace, with all bolts for 2 in. x 1 in. wood slats.

For Price, see following page

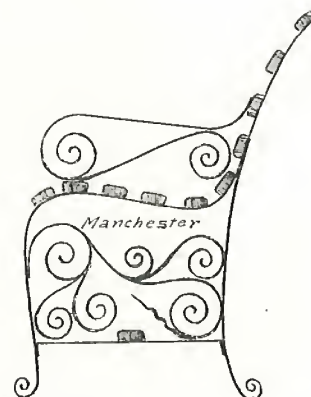
# MANCHESTER IRON WORKS, ST. LOUIS



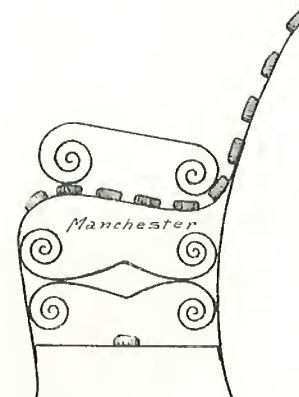
No. 601



No. 602



No. 603



No. 604

## LAWN BENCHES OR SETTEES

|   | No. 601 | No. 602 | No. 603 | No. 604 |
|---|---------|---------|---------|---------|
| Per set of two stands and one center brace and bolts.....                       | \$3.75  | \$4.45  | \$7.20  | \$6.00  |
| Per set of two arm rests.....   | .40     | .60     | 1.20    | 1.00    |
| Per set of eleven 2 in. x 1 in. oak slats, 6 ft. long, painted.....             | 2.20    | 2.20    | 2.20    | 2.20    |
| Bench complete, including stands, brace, slats and arm rests, shipped K. D..... | 6.35    | 7.25    | 10.60   | 9.20    |

We can also furnish settees with steel slats, for cemeteries and parks; any length.

All prices f. o. b. cars St. Louis



# MANCHESTER IRON WORKS, ST. LOUIS

## WEIGHTS OF SHEETS AND PLATES

Estimated weights by Mills Standard gauge of main sizes used.

This table is to aid our customers in determining the weight and thickness of material, when number of steel is mentioned in quotations.

| Number<br>of gauge | Thickness in in.    |          | Weight per sq. ft.<br>in pounds |
|--------------------|---------------------|----------|---------------------------------|
|                    | Fractions           | Decimals |                                 |
| 7-0's              | $\frac{1}{2}$ in.   | .5       | 20.4                            |
| 000                | $\frac{3}{8}$ in.   | .375     | 15.3                            |
| 0                  | $\frac{5}{16}$ in.  | .312     | 12.75                           |
| 3                  | $\frac{1}{4}$ in.   | .25      | 10.2                            |
| 7                  | $\frac{3}{16}$ in.  | .187     | 7.65                            |
| 8                  | $\frac{11}{64}$ in. | .171     | 7.0125                          |
| 9                  | $\frac{5}{32}$ in.  | .156     | 6.375                           |
| 10                 | $\frac{9}{64}$ in.  | .140     | 5.7375                          |
| 11                 | $\frac{1}{8}$ in.   | .125     | 5.1                             |
| 12                 | $\frac{7}{64}$ in.  | .109     | 4.625                           |
| 14                 | $\frac{5}{64}$ in.  | .078     | 3.1875                          |
| 16                 | $\frac{1}{16}$ in.  | .062     | 2.55                            |
| 18                 | $\frac{1}{20}$ in.  | .05      | 2.04                            |
| 20                 | $\frac{3}{80}$ in.  | .037     | 1.53                            |
| 22                 | $\frac{1}{32}$ in.  | .031     | 1.275                           |
| 24                 | $\frac{1}{40}$ in.  | .025     | 1.02                            |

### $\frac{1}{4}$ in. Universal Mill Plates

Weight in pounds per lineal ft.

| Width  | Weight |
|--------|--------|
| 12 in. | 10.2   |
| 11 in. | 9.34   |
| 10 in. | 8.5    |
| 9 in.  | 7.65   |
| 8 in.  | 6.8    |
| 7 in.  | 5.95   |

We carry  $\frac{1}{4}$  in. U. M. Plates in stock, 35 ft. long.

# MANCHESTER IRON WORKS, ST. LOUIS

## WEIGHTS OF I BEAMS, CHANNELS, ANGLES AND TEES

Estimated weight in pounds per ft.

| I Beams |                 |        | Channels |                 |        |
|---------|-----------------|--------|----------|-----------------|--------|
| Size    | Width of flange | Weight | Size     | Width of flange | Weight |
| 15 in.  | 5½              | 42     | 15 in.   | 3.4             | 33     |
| 12 in.  | 5               | 31.5   | 12 in.   | 2.94            | 20.5   |
| 10 in.  | 4.66            | 25     | 10 in.   | 2.60            | 15     |
| 9 in.   | 4.33            | 21     | 9 in.    | 2.43            | 13.25  |
| 8 in.   | 4               | 18     | 8 in.    | 2.26            | 11.25  |
| 7 in.   | 3.66            | 15     | 7 in.    | 2.09            | 9.75   |
| 6 in.   | 3.33            | 12.25  | 6 in.    | 1.92            | 8      |
| 5 in.   | 3               | 9.75   | 5 in.    | 1.75            | 6.50   |
| 4 in.   | 2.66            | 7.5    | 4 in.    | 1.58            | 5.25   |
| 3 in.   | 2.33            | 5.5    | 3 in.    | 1.41            | 4      |

I beams, channels, angles and tees 3 in. and larger are sold by nominal weight; small channels, angles and tees by actual weight.

| Angles                              |        | Tees  |        |
|-------------------------------------|--------|---|--------|
| Size in in.                         | Weight | Size in in.   | Weight |
| 6 x6 x⅜                             | 14.9   | 3 x3 x <sup>5</sup> / <sub>16</sub>                             | 6.8    |
| 6 x4 x⅜                             | 12.3   | 2½x2½x <sup>5</sup> / <sub>16</sub>                             | 5.6    |
| 5 x5 x⅜                             | 12.3   | 2 x2 x¼   | 3.7    |
| 5 x4 x⅜                             | 11.0   | 1½x1½x <sup>3</sup> / <sub>16</sub>                             | 2.0    |
| 5 x3½x <sup>5</sup> / <sub>16</sub> | 8.7    | <b>Small Channels or Grooved Steel</b>                          |        |
| 4 x4 x <sup>5</sup> / <sub>16</sub> | 8.2    |   |        |
| 4 x3 x <sup>5</sup> / <sub>16</sub> | 7.2    |   |        |
| 3 x3 x¼                             | 4.9    |   |        |
| 2½x2½x¼                             | 4.1    | Size in in.   | Weight |
| 2½x2 x¼                             | 3.7    |   |        |
| 2 x2 x¼                             | 3.2    | 2 x1 x <sup>3</sup> / <sub>16</sub>                             | 2.4    |
| 2 x2 x <sup>3</sup> / <sub>16</sub> | 2.5    | 2 x <sup>9</sup> / <sub>16</sub> x <sup>3</sup> / <sub>16</sub> | 1.91   |
| 1½x1½x <sup>3</sup> / <sub>16</sub> | 1.8    | 1½x <sup>1</sup> / <sub>2</sub> x <sup>1</sup> / <sub>8</sub>   | 1.12   |
| 1¼x1¼x <sup>3</sup> / <sub>16</sub> | 1.5    | 1¼x <sup>1</sup> / <sub>2</sub> x <sup>1</sup> / <sub>8</sub>   | 1.01   |
| 1¼x1¼x <sup>1</sup> / <sub>8</sub>  | 1.1    | 1 x <sup>1</sup> / <sub>2</sub> x <sup>1</sup> / <sub>8</sub>   | 0.82   |
| 1 x1 x <sup>1</sup> / <sub>8</sub>  | 0.8    |   |        |

These tables do not comprise all sizes, but only those carried in stock or used in manufacturing our products. Table of I beams and channels includes only the standard or light weight sections. Heavier beams should only be used when there is not sufficient room for the larger size beam.

# MANCHESTER IRON WORKS, ST. LOUIS

## ESTIMATED WEIGHTS OF STEEL BARS PER FOOT, IN POUNDS

| Round Bars     |                   |
|----------------|-------------------|
| Size<br>in in. | Weight<br>per ft. |
| $\frac{1}{8}$  | .042              |
| $\frac{1}{4}$  | .167              |
| $\frac{5}{16}$ | .261              |
| $\frac{3}{8}$  | .375              |
| $\frac{7}{16}$ | .511              |
| $\frac{1}{2}$  | .667              |
| $\frac{9}{16}$ | .845              |
| $\frac{5}{8}$  | 1.043             |
| $\frac{3}{4}$  | 1.502             |
| $\frac{7}{8}$  | 2.044             |
| 1              | 2.670             |
| $1\frac{1}{8}$ | 3.379             |
| $1\frac{1}{4}$ | 4.173             |
| $1\frac{1}{2}$ | 6.008             |
| $1\frac{3}{4}$ | 8.178             |
| 2              | 10.68             |

| Square Bars    |                   |
|----------------|-------------------|
| Size<br>in in. | Weight<br>per ft. |
| $\frac{1}{8}$  | .053              |
| $\frac{1}{4}$  | .212              |
| $\frac{5}{16}$ | .333              |
| $\frac{3}{8}$  | .478              |
| $\frac{7}{16}$ | .651              |
| $\frac{1}{2}$  | .850              |
| $\frac{9}{16}$ | 1.076             |
| $\frac{5}{8}$  | 1.328             |
| $\frac{3}{4}$  | 1.913             |
| $\frac{7}{8}$  | 2.603             |
| 1              | 3.400             |
| $1\frac{1}{8}$ | 4.303             |
| $1\frac{1}{4}$ | 5.312             |
| $1\frac{1}{2}$ | 7.650             |
| $1\frac{3}{4}$ | 10.410            |
| 2              | 13.600            |

| Width<br>in in. | Flat Bars        |                |               |                |               |               |
|-----------------|------------------|----------------|---------------|----------------|---------------|---------------|
|                 | Thickness in in. |                |               |                |               |               |
|                 | $\frac{1}{8}$    | $\frac{3}{16}$ | $\frac{1}{4}$ | $\frac{5}{16}$ | $\frac{3}{8}$ | $\frac{1}{2}$ |
|                 | lbs.             | lbs.           | lbs.          | lbs.           | lbs.          | lbs.          |
| $\frac{1}{2}$   | .213             | .319           | .475          | .53            | .64           |               |
| $\frac{5}{8}$   | .265             | .399           | .53           | .665           | .795          |               |
| $\frac{3}{4}$   | .32              | .479           | .64           | .795           | .96           |               |
| $\frac{7}{8}$   | .373             | .555           | .745          | .930           | 1.115         |               |
| 1               | .425             | .638           | .85           | 1.06           | 1.28          | 1.70          |
| $1\frac{1}{4}$  | .53              | .797           | 1.06          | 1.33           | 1.59          | 2.12          |
| $1\frac{1}{2}$  | .64              | .957           | 1.28          | 1.59           | 1.92          | 2.55          |
| $1\frac{3}{4}$  | .745             | 1.11           | 1.49          | 1.86           | 2.23          | 2.98          |
| 2               | .85              | 1.28           | 1.70          | 2.12           | 2.55          | 3.40          |
| $2\frac{1}{2}$  | 1.06             | 1.59           | 2.12          | 2.65           | 3.19          | 4.25          |
| 3               | 1.275            | 1.91           | 2.55          | 3.19           | 3.83          | 5.10          |
| 4               | 1.70             | 2.55           | 3.40          | 4.25           | 5.10          | 6.80          |
| 5               | 2.125            | 3.19           | 4.25          | 5.31           | 6.38          | 8.50          |
| 6               | 2.55             | 3.83           | 5.10          | 6.38           | 7.65          | 10.20         |

For cold twisted squares (reinforcing rods), use square bar table.

# MANCHESTER IRON WORKS, ST. LOUIS

## SAFE LOADS OF STEEL CHANNELS

Standard or light weight sections

Safe loads are given in pounds uniformly distributed, and include weight of channel

| Size of<br>Channel<br>and Weight |     |      | Distance between supports in ft. |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------------------------|-----|------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                                  |     |      | 4                                | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    |
| 3 in.                            | 4   | lbs. | 2910                             | 2330  | 1940  | 1660  | 1450  | 1290  | 1160  | 1060  | 970   | 890   | 830   | 780   | 730   |
| 4 in.                            | 5¼  | lbs. | 5060                             | 4050  | 3370  | 2890  | 2530  | 2250  | 2020  | 1840  | 1690  | 1560  | 1440  | 1350  | 1260  |
| 5 in.                            | 6½  | lbs. | 7910                             | 6330  | 5270  | 4520  | 3960  | 3520  | 3160  | 2880  | 2640  | 2430  | 2260  | 2110  | 1980  |
| 6 in.                            | 8   | lbs. | 11550                            | 9240  | 7700  | 6600  | 5780  | 5130  | 4620  | 4200  | 3850  | 3550  | 3300  | 3080  | 2890  |
| 7 in.                            | 9¾  | lbs. | 16070                            | 12850 | 10710 | 9180  | 8030  | 7140  | 6430  | 5840  | 5360  | 4940  | 4590  | 4280  | 4020  |
| 8 in.                            | 11¼ | lbs. | 21530                            | 17230 | 14360 | 12310 | 10770 | 9570  | 8610  | 7830  | 7180  | 6630  | 6150  | 5740  | 5380  |
| 9 in.                            | 13¼ | lbs. | 28040                            | 22430 | 18690 | 16020 | 14020 | 12460 | 11220 | 10200 | 9350  | 8630  | 8010  | 7480  | 7010  |
| 10 in.                           | 15  | lbs. |                                  |       |       |       |       |       | 14270 | 12970 | 11890 | 10980 | 10190 | 9510  | 8920  |
| 12 in.                           | 20½ | lbs. |                                  |       |       |       |       |       | 22780 | 20700 | 18980 | 17520 | 16270 | 15180 | 14230 |
| 15 in.                           | 33  | lbs. |                                  |       |       |       |       |       | 44450 | 40410 | 37040 | 34190 | 31750 | 29630 | 27780 |



# MANCHESTER IRON WORKS, ST. LOUIS

## SAFE LOADS OF STEEL ANGLES

This table is confined to sizes principally used

Safe loads are given in pounds uniformly distributed, and include weight of angle

| Size of Angle       |                  | Weight  | Distance between supports in ft. |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------|------------------|---------|----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| in in.              |                  | per ft. | 3                                | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   |
| Either leg vertical |                  |         |                                  |      |      |      |      |      |      |      |      |      |      |      |      |
| 6x6                 | x $\frac{3}{8}$  | 14.9    | 12550                            | 9410 | 7530 | 6270 | 5380 | 4700 | 4180 | 3760 | 3420 | 3140 | 2900 | 2690 | 2510 |
| 5x5                 | x $\frac{3}{8}$  | 12.3    | 8610                             | 6460 | 5170 | 4310 | 3690 | 3230 | 2870 | 2580 | 2350 | 2150 | 1990 | 1850 | 1720 |
| 4x4                 | x $\frac{5}{16}$ | 8.2     | 4580                             | 3430 | 2750 | 2290 | 1960 | 1720 | 1530 | 1370 | 1250 | 1140 | 1060 | 980  | 920  |
| 3x3                 | x $\frac{1}{4}$  | 4.9     | 2050                             | 1540 | 1230 | 1030 | 880  | 770  | 680  | 620  | 560  | 510  |      |      |      |
| Long leg vertical   |                  |         |                                  |      |      |      |      |      |      |      |      |      |      |      |      |
| 6x4                 | x $\frac{3}{8}$  | 12.3    | 11800                            | 8850 | 7080 | 5900 | 5060 | 4420 | 3930 | 3540 | 3220 | 2950 | 2720 | 2530 | 2360 |
| 5x3 $\frac{1}{2}$   | x $\frac{5}{16}$ | 8.7     | 6860                             | 5160 | 4130 | 3440 | 2950 | 2580 | 2290 | 2060 | 1880 | 1720 | 1590 | 1470 | 1380 |
| 4x3                 | x $\frac{5}{16}$ | 7.2     | 4390                             | 3290 | 2630 | 2190 | 1880 | 1640 | 1460 | 1320 | 1200 | 1100 | 1010 | 940  | 880  |
| Short leg vertical  |                  |         |                                  |      |      |      |      |      |      |      |      |      |      |      |      |
| 6x4                 | x $\frac{3}{8}$  | 12.3    | 5700                             | 4280 | 3420 | 2850 | 2440 | 2140 | 1900 | 1710 | 1550 | 1430 | 1320 | 1220 | 1140 |
| 5x3 $\frac{1}{2}$   | x $\frac{5}{16}$ | 8.7     | 3630                             | 2720 | 2180 | 1820 | 1560 | 1360 | 1210 | 1090 | 990  | 910  | 840  | 780  |      |
| 4x3                 | x $\frac{5}{16}$ | 7.2     | 2610                             | 1960 | 1570 | 1310 | 1120 | 980  | 870  | 780  | 710  | 650  | 600  | 560  |      |

# MANCHESTER IRON WORKS, ST. LOUIS

## USEFUL INFORMATION

### Weights of Metals per cu. ft. in pounds

|                          |      |
|--------------------------|------|
| Platinum . . . . .       | 1344 |
| Gold, 24 carat. . . . .  | 1206 |
| Lead . . . . .           | 711  |
| Silver . . . . .         | 655  |
| Copper, rolled . . . . . | 555  |
| Copper, cast . . . . .   | 540  |
| Steel . . . . .          | 490  |
| Iron, wrought. . . . .   | 480  |
| Iron, cast. . . . .      | 450  |
| Aluminum . . . . .       | 164  |

### No. per pound of Common Wire Nails

|                 |     |
|-----------------|-----|
| 2 dwt. . . . .  | 875 |
| 3 dwt. . . . .  | 570 |
| 4 dwt. . . . .  | 315 |
| 5 dwt. . . . .  | 270 |
| 6 dwt. . . . .  | 180 |
| 7 dwt. . . . .  | 160 |
| 8 dwt. . . . .  | 105 |
| 9 dwt. . . . .  | 95  |
| 10 dwt. . . . . | 70  |
| 12 dwt. . . . . | 65  |
| 16 dwt. . . . . | 50  |
| 20 dwt. . . . . | 30  |
| 30 dwt. . . . . | 24  |
| 40 dwt. . . . . | 18  |

### Weights of Masonry and Building

#### Material per cu. ft. in pounds

|                                    |         |
|------------------------------------|---------|
| Brickwork, lime, mortar. . . . .   | 120-130 |
| Brickwork, cement, mortar. . . . . | 130-140 |
| Concrete . . . . .                 | 140-145 |
| Sandstone rubble . . . . .         | 145     |
| Granite, solid . . . . .           | 170     |
| Slate, solid . . . . .             | 175     |
| Marble . . . . .                   | 168     |
| Window glass . . . . .             | 157     |
| Cement, Portland . . . . .         | 80-100  |
| Sand . . . . .                     | 90-100  |
| Lime . . . . .                     | 53      |
| Clay . . . . .                     | 120     |

### Lumber

|                         |    |
|-------------------------|----|
| Boxwood . . . . .       | 60 |
| Maple . . . . .         | 49 |
| White oak . . . . .     | 48 |
| Ash . . . . .           | 47 |
| Southern pine . . . . . | 45 |
| Red oak . . . . .       | 40 |
| Yellow pine . . . . .   | 34 |
| Spruce . . . . .        | 25 |
| Cork . . . . .          | 15 |

Before starting to build, send us your plans for estimate of the iron and steel required.

## MISCELLANEOUS MEMORANDA

$5\frac{1}{2}$  yds.=1 rod, 40 rods=1 furlong, 9 furlongs=1 mile.  
 $144 \text{ sq. in.}=1 \text{ sq. ft.}$ ,  $9 \text{ sq. ft.}=1 \text{ sq. yd.}$ ,  $30\frac{1}{4} \text{ sq. yds.}=1 \text{ sq. rod.}$   
 $100 \text{ sq. rods}=1 \text{ acre}$ ,  $640 \text{ acres}=1 \text{ sq. mile}$ ,  $5,280 \text{ ft.}=1 \text{ mile.}$   
 $1,728 \text{ cu. in.}=1 \text{ cu. ft.}$ ,  $128 \text{ cu. ft.}=1 \text{ cord.}$   
 $90 \text{ degrees}=1 \text{ right angle}$ ,  $360 \text{ degrees}=1 \text{ circle.}$   
Circumference of circle=dia.  $\times 3.1416$ .  
Area of circle=rad.  $\times$  rad.  $\times 3.1416$ .  
Volume of cylinder=area of base  $\times$  height.  
Volume of cone=one-third of area of base  $\times$  height.

To find diameter of round rod of equal area with given square bar, multiply side of square by 1.128, or divide diameter of round rod by 1.128 to find side of square bar of equal area, when round bar is given.

### Comparison of Northern Yellow Pine Columns with Cast Iron Columns; Breaking Loads in 1,000 Pounds

| Description of column  | Height |        |        |
|--|--------|--------|--------|
|  | 8 ft.  | 10 ft. | 12 ft. |
| 6 in. x 6 in. solid yellow pine. . . . .                     | 120    | 115    | 110    |
| 8 in. x 8 in. solid yellow pine. . . . .                     | 225    | 215    | 210    |
| 6 in. dia. round Cast Iron, $\frac{3}{4}$ in. metal. . . . . | 570    | 465    | 375    |
| 6 in. x 6 in. Cast Iron, $\frac{3}{4}$ in. metal. . . . .    | 820    | 685    | 566    |

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